UGANDA PROTECTORATE.

# ANNUAL REPORT

OF THE

# DEPARTMENT OF AGRICULTURE

FOR THE

YEAR ENDED 31ST DECEMBER, 1925.

IMPERIAL MYCOLOGICAL INSTITUTE
3 FEB. 1933

**PRICE: Shs. 4.**

Published by Command of His Excellency the Governor.

ENTEBBE:

PRINTED BY THE GOVERNMENT PRINTER, UGANDA.

1926.

8018

UGANDA PROTECTORATE.

# ANNUAL REPORT

OF THE

# DEPARTMENT OF AGRICULTURE

FOR THE

YEAR ENDED 31ST DECEMBER, 1925.

**PRICE: Shs. 4.**

Published by Command of His Excellency the Governor.

ENTEBBE:

PRINTED BY THE GOVERNMENT PRINTER, UGANDA.

1926.

8018

# STAFF LIST.

| | |
|---|---|
| *Director of Agriculture* ... ... | S. SIMPSON, C.M.G., B.SC. (EDIN.), M.R.A.S.E., N.D.A. |
| *Deputy Director of Agriculture* ... | L. HEWETT, M.R.A.C. |
| *Statistician and Secretary Cotton Control Board* ... | A. S. WIDGERY. |
| *Office Superintendent* ... ... | VACANT. |
| *Clerk* ... ... ... | S. GREY. |

## GENERAL DIVISION.

*Senior Agricultural Officers :*

A. R. MORGAN. R. G. HARPER.

E. G. STAPLES, M.A., M.R.A.C., DIP. AGRIC. (CANTAB).

*Agricultural Officers :*

J. D. SNOWDEN. R. T. WICKHAM. B. I. SLAUGHTER, B.SC. (LOND)., A.R.C.S.

C. E. J. BIGGS, B.SC. (LOND.), DIP. AGRIC. (WYE). D. STEDMAN-DAVIES, B.SC. (WALES).

G. F. CLAY, M.C., B.SC. (EDIN.), N.D.A., N.D.D. (HONS.).

A. B. KILLICK, B.SC. (LOND.), DIP. AGRIC. (WYE).

N. S. HAIG, B.SC. (LOND.), DIP. AGRIC. (WYE).

J. C. F. HOPKINS, B.SC. (LOND.), A.I.C.T.A., (Salary paid by Empire Cotton Growing Corporation).

| | |
|---|---|
| *Coffee Officer* ... ... ... ... ... | L. P. ROSS. |
| *Ginning Inspector* ... ... ... ... | O. E. LORD. |

*Plantation Managers :*

G. T. PHILPOTT. F. W. HALL. CAPT. J. S. HARMSWORTH, M.C.

C. HAZEL. P. CHANDLER. E. A. RUCK.

*Ploughing Instructors :*

E. M. BAIRD. H. ALLEN.

E. B. STEVENSON, N.D.A., N.D.D. A. L. STEPHENS.

## SCIENTIFIC DIVISION.

| | |
|---|---|
| *Mycologist* ... ... | W. SMALL, M.B.E., Ph.D., M.A., B.SC., F.L.S. |
| *Botanist* ... ... | T. D. MAITLAND, M.B.E. |
| *Entomologist* ... ... | H. HARGREAVES, A.R.C.S., D.I.C., F.E.S. |
| *Assistant Entomologist* ... ... | G. L. R. HANCOCK, B.A., F.E.S. |
| *Cotton Botanist* ... ... | G. W. NYE, B.SC. (LOND.), DIP. AGRIC. (WYE). |
| *Agricultural Chemist* ... ... | W. S. MARTIN, Ph.D., M.SC. (LOND.), A.R.C.S., D.I.C., A.I.C. |

## CLERICAL STAFF.

J. C. DE SOUZA. A. S. REMEDIOS. M. A. S. MENEZES.

UGANDA PROTECTORATE.

# DEPARTMENT OF AGRICULTURE.

| | | *P. O. Box No.* | *Telephone No.* |
|---|---|---|---|
| Head Office ... ... ... ... | Kampala ... | 281 | 15 |
| Mycological Office and Laboratory ... ... | Kampala ... | 5 | 26 |
| Entomological Office and Laboratory ... ... | Kampala ... | 5 | 25 |
| Botanical Gardens and Meteorological Office ... | Entebbe ... | 60 | 38 |
| Jinja Office ... ... ... ... ... | Jinja ... | 67 | 22 |

Experimental Stations:—

(1) Kampala.
(2) Kakumiro, Mubende.
(3) Simsa, Soroti.
(4) Fort Portal, Toro.
(5) Serere, Teso.
(6) Bukalasa, Mengo.

# ANNUAL REPORT, 1925.

## CONTENTS.


| | Page. |
|---|---|
| Staff List ... ... ... ... ... ... ... | 2 |
| Report of the Director of Agriculture ... ... ... ... ... | 3—13 |
| Report of the Botanist ... ... ... ... ... ... | 13—15 |
| Report of the Cotton Botanist ... ... ... ... ... ... | 16—22 |
| Report of the Mycologist ... ... ... ... ... ... | 23—24 |
| Report of the Assistant Entomologist ... ... ... ... ... | 25—28 |
| Report of the Senior Agricultural Officer, Serere ... ... ... ... | 29—30 |
| Reports on Serere and Simsa Experimental Stations ... ... ... ... | 30—31 |
| Notes by the Coffee Officer ... ... ... ... ... ... | 32 |


## APPENDICES.


| | |
|---|---|
| (1) Report on suitability of "Lusenke" and "Elephant" grass for conversion into synthetic farmyard manure ... ... ... ... ... | 33 |
| (2) Report on grasses grown on the Government Plantation, Kampala ... ... | 34—35 |
| (3) Broker's report on six samples of cotton grown in the Teso District ... ... | 35 |
| (4) Statistics of Native Agriculture—Crops under cultivation ... ... ... | 36 |
| (5) Statistics of Native Agriculture—Live-Stock ... ... ... ... | 37 |
| (6) Statistics of European Agriculture—Crops under cultivation ... ... | 38 |
| (7) Statistics of Indian Agriculture—Crops under cultivation ... ... ... | 39 |
| (8) Statistics of Live-Stock on European and Indian Plantations ... ... | 40 |
| (9) Comparative Statement of Exports, 1925 ... ... ... ... | 41 |
| (10) do do of do. for five years ... ... ... | 41 |
| (11) Statistics of Ginning Machinery, 1925 ... ... ... ... | 42 |
| (12) Meteorological Statistics ... ... ... ... ... | 43—52 |

# ANNUAL REPORT

OF

# THE DEPARTMENT OF AGRICULTURE,

UGANDA PROTECTORATE,

**for the Year ended 31st December, 1925.**

## General.

The year under review has been one of exceptional prosperity for all branches of trade and industry. A record cotton crop, for which high prices were realized, resulted in a greatly increased spending power on the part of the natives, and trade benefitted accordingly.

2. Coffee yields were very satisfactory, and rubber prices were well maintained throughout the year.

3. Weather conditions were generally favourable to all crops. The rains were fairly well distributed and the only exceptional features were the high fall registered at many stations for the month of January, usually a dry month, and the prolonged autumn rains which continued well into December.

4. Cotton prices showed a gradual decline towards the end of the year and the prospects for the forthcoming marketing season were not nearly so bright. Traders who had relied on a repetition of the previous season were carrying very large stocks, which in view of the considerable fall in cotton prices and consequent reduction in the spending power of the natives, were not justified.

## Exports.

5. The value of domestic produce exported exceeded £5,000,000. The following table gives details of exports during the year. Comparative tables will be found in Appendices Nos. 9 and 10.

| *Description.* | *Quantity.* | *Value £.* | *Per cent.* |
|---|---|---|---|
| Cotton, raw ... ... | 782,152 centals ... | 4,685,992 ... | 91·94 |
| Coffee, raw ... ... | 29,883 cwts. ... | 139,469 ... | 2·74 |
| Cotton, seed ... ... | 21,928 tons ... | 122,790 ... | 2·41 |
| Rubber ... ... | 8,058 centals ... | 68,704 ... | 1·35 |
| Sugar, Centrifugal ... | 4,053 cwts. ... | 7,447 ... | 0·14 |
| Simsim ... ... | 214 tons ... | 4,523 ... | 0·09 |
| Skins (sheep and goats) ... | 55,350 skins ... | 4,014 ... | 0·08 |
| Hides (dry and dry salted) ... | 7,027 cwts. ... | 29,843 ... | 0·58 |
| Ivory ... ... | 307 cwts. ... | 28,535 ... | 0·56 |
| Other exports ... ... | ... ... | 5,400 ... | 0·11 |
| | | £5,096,717 | |

## Transport.

6. (*a*) *Internal Transport.*—During the 1925 marketing season no difficulty was experienced in moving the cotton crop to lake ports and stations. Government transport and private enterprise combined were able to cope with the large increase in tonnage without apparent effort. The excellent road system of Uganda makes it possible for light commercial motor vehicles to penetrate into the most outlying districts, and the loads are in turn picked up by heavier vehicles on the main metalled roads and delivered at the station or port of shipment.

(*b*) *Railway.*—Whilst the question of internal transport presented no difficulties, the same unfortunately cannot be said of transport from points on the railway system to the coast. Even with the improvements mentioned in the last annual report, it was found that the handling of a greatly increased cotton crop at Uganda ports and stations could not be undertaken with the necessary despatch.

The congestion at vital points was apparent very early in the season, and in April it was considered advisable to appoint a committee to go into the whole question. The committee was of opinion that, *inter alia*, there was no prospect of any great improvement in transport facilities until the railway extension now under construction has reached Tororo, within the boundaries of the Protectorate.

This extension when completed will provide facilities for the transport of a large proportion of the cotton crop direct to the coast without transhipment, and thus save many handlings and prevent loss by damage and delay at "bottle-neck" ports.

The prospects for the 1926 season are considerably brighter. The railway authorities have made additional improvements in the matter of space, storage and general facilities for handling. This, together with the prohibition of the movement of cotton seed between 1st January and 31st May, and the limitations set on the transport of unginned cotton and half-pressed bales, should do much to facilitate the shipment of the crop in 1926.

## Cotton.

7. (*a*) *1924-25 Crop.*—The marketing of the crop began on January 1st, and a record acreage produced a heavy crop. Prices were maintained at a comparatively high level throughout the season. The exports of cotton for the year amounted to 196,038 bales of 400 lbs. each valued at £4,685,992, an increase of 67,434 bales and £1,199,427 respectively over the previous year. The excise duty on cotton amounted to £216,988, as compared with £158,614 for the year 1924. The quality of the crop was generally very good, and the percentage of low grade cotton was smaller than usual.

(*b*) *1925-26 Crop.*—Following on a successful season both as regards yield and price, the native growers increased their efforts to extend the acreage for the following season, and it was estimated that the total area planted in 1925 amounted to approximately 617,324 acres, the details of which are given below. For the purpose of comparison, the previous year's figures are also shown:—

| | 1925. | 1924. |
|---|---|---|
| | *Acres.* | *Acres.* |
| EASTERN PROVINCE:— | | |
| Busoga District | 87,333 | 79,850 |
| Budama District | 40,487 | 41,000 |
| Bugwere District | 53,743 | 64,370 |
| Bugishu District | 43,050 | 28,680 |
| Teso District | 97,500 | 87,500 |
| Lango District | 61,500 | 54,100 |
| TOTALS | 383,613 | 355,500 |
| BUGANDA PROVINCE:— | | |
| Mengo District | 110,000 | 100,000 |
| Entebbe District | 30,000 | 25,000 |
| Masaka District | 30,000 | 30,000* |
| Mubenbe District | 30,000 | 30,000 |
| TOTALS | 200,000 | 185,000 |
| NORTHERN PROVINCE:— | | |
| Bunyoro District | 12,000 | 6,000 |
| Gulu District | 7,988 | 8,800 |
| Chua District | 5,841 | 5,314 |
| West Nile District | 1,000 | 6,000 |
| TOTALS | 26,829 | 26,114 |
| WESTERN PROVINCE:— | | |
| Toro District | 3,877 | 3,000* |
| Ankole District | 3,000 | 3,200 |
| Kigezi District | 5 | — |
| TOTALS | 6,882 | 6,200 |
| GRAND TOTALS | 617,324 | 572,814 |

*Revised estimate.

At the end of the year the weather conditions were similar to those prevailing at the end of 1924. The autumn rains continued well into December and although some damage was done to the ripening crop, the position was generally satisfactory and late sowings reaped considerable benefit.

The report of the Senior Agricultural Officer, Mr. R. G. Harper, deals with the Eastern Province and will be found on page 29.

(*c*) *Ginneries.*—The Ginning Inspector paid 189 visits of inspection to ginneries during the year. The ginning of the 1924-25 crop was practically completed by the end of September. The storage accommodation at the ginneries was found to be generally adequate, notwithstanding the fact that record quantities of cotton were handled.

Owing to the large crop, ginners made every effort to deal with their buyings as quickly as possible. This led to some carelessness in handling and faulty packing on the part of some of the smaller ginners who dispose of their lint locally. In two cases it was found necessary to prosecute under the powers conferred by the Cotton Ordinance, and a fine was imposed in each case.

Each season Officers of the Administration and of this Department do everything possible to see that the native growers pick over the seed cotton before it is offered for sale, but their efforts to improve the quality are largely neutralized by the action of certain ginners of the type mentioned above. This is due to the fact that no generally recognized and satisfactory form of contract exists for the local purchase and sale of lint cotton. Shippers have no redress should a dispute arise after they have taken over the cotton, and consequently the careless ginner is not encouraged to improve his methods. The position as regards ginners who are direct shippers is entirely different, as these firms must and do realize that in their own interests the greatest care must be exercised to improve the grade and exclude foreign matter from the bales. The following extract from the Ginning Inspector's report is of interest as bearing on this matter:—

> "I cannot say that generally any improvement in ginning can be recorded. The large firms were generally ginning very well before, and the smaller firms have little or no inducement to take more care with their ginning, since there are exporters ready and anxious to buy anything the seller chooses to describe as 'AR' ('A' quality, roller ginned) and to pay for it in advance."

(*d*) *Ginning Licences.*—Particulars of licences issued to gin and bale cotton during the year are given below and for the purpose of comparison the figures for 1924 are also shown:—

| | *No. of licences issued.* | |
|---|---|---|
| | 1925. | 1924. |
| Eastern Province ... ... ... | 90 | 77 |
| Buganda Province ... ... ... | 55 | 42 |
| Northern Province ... ... ... | 8 | nil |
| Western Province ... ... ... | 2 | nil |
| TOTALS ... ... ... | 155 | 119 |

From the above it will be seen that there is an increase of 36 licences issued during the year. Tabulated details of ginneries are given in Appendix No. 11 of this report.

(*e*) *Cotton Seed.*—The export of this commodity was well maintained, although the large quantities shipped added greatly to the congestion at the receiving stations. Much of the seed had been packed and stored for some time before it was actually shipped, and further delays and exposure at ports and stations resulted in considerable loss through the rotting of the bags.

Exports reached a total of 21,928 tons, valued at £122,790.

(*f*) *Destination of Uganda Cotton.*—During 1925 there was a pronounced tendency in favour of the Liverpool market, and more than half of the crop was shipped direct to that port. Bombay took approximately 80,000 bales of which about 35,000 bales were re-exported to Japan, and smaller quantities to the United Kingdom, Spain and Italy. Buyers directly connected with Liverpool firms are now established in Uganda, and there is no doubt that shipments to Liverpool would show a still larger increase if sellers were bound by a contract containing a clause allowing for appeal to a recognised body in cases of false packing or adulteration.

(*g*) *Cotton Control Board.*—The Board met on fourteen occasions during the year. Recommendations were made with regard to the establishment of central cotton markets in Buganda, and final details were worked out and submitted in connection with the establishment of permanent central cotton markets in the Eastern Province. The Board acts in an advisory capacity at present and various matters relating to the cotton industry are placed before it for consideration.

(*h*) *Cotton Seed Selection Stations.*—Selection work was continued and extended at the Serere station in the Teso District of the Eastern Province and also at the sub-station at Simsa near Soroti. The addition of a Cotton Botanist to the staff of the Department at the end of 1924 afforded some relief to Mr. R. G. Harper, Senior Agricultural Officer, who has carried out this branch of the work single-handed for the past twelve years.

Reports by the Senior Agricultural Officer, Mr. R. G. Harper, and the Cotton Botanist, Mr. G. W. Nye, are given on pages 29 and 16.

At the Bukalasa Station, in Mengo District, work on cotton is also being carried out.

## Coffee.

8. Coffee still holds second place in the list of exports, and is the principal crop cultivated by Europeans. Exports during 1925 amounted to 29,883 cwts. valued at £139,469, compared with 41,093 cwts. valued at £167,696 for the previous year.

The falling off in production is accounted for by the fact that it is now generally recognized that the variety *Coffea Arabica* is not suited to the lower and more humid districts, and in this connection the notes by the Coffee Officer on page 32 are of interest.

## Native Coffee Industry.

9. Native cultivators have shown an increasing interest in this crop, and although many thousands of seedlings of *C. Arabica* and *C. Robusta* were distributed free to natives during the year, it has now been decided with one exception, to confine further development and extension of this industry to improved types of *C. Robusta* only. In this connection, it is interesting to note that the Government Botanist, whose report is given on page 13, has during the past ten years given special attention to the breeding of improved strains of this variety. This work has met with a considerable degree of success, and seed is now available for wider distribution.

The exception referred to is the Bugishu country of Mount Elgon, where a flourishing young *C. Arabica* industry is now well established. The following extract from the Agricultural Officer's report shows concisely the position in that area:—

> "During 1925, coffee planting has been taken up with great enthusiasm by all three counties in Bugishu, and the demand for trees was so great that the two central nurseries at Bubulu and Buyobo were unable to cope with it. A large number of seedlings were also raised by Chiefs, but these are not usually so well tended and robust as those raised by this Department. It is hoped to open a third central nursery at Bulago in 1926 to supply the more northerly gombololas of Bugishu. At present, no coffee is grown north of Sabei gombolola.
>
> "Below is given the number of trees planted in each County from March to October:—

| | | |
|---|---|---|
| North | Bugishu ... ... ... ... | 84,450 |
| South | do ... ... ... ... | 53,031 |
| Central | do ... ... ... ... | 2,205 |
| | TOTAL ... ... | 139,686 |

> "The above figures include trees given out from central nurseries and those raised in Chiefs' own seed beds. This represents an acreage of approximately 205 acres; added to the acreage planted previous to 1925, this brings the total to 475 acres.
>
> "The two Lukiko pulping stations were working from October to the end of December; the amount of coffee cherry brought in by the natives for pulping was slightly more than last year, but considerably more use could be made of them by the growers.

"The number of lbs. pulped at each station is shown below, together with the figures for 1924 :—

| | 1925. | 1924. |
|---|---|---|
| | lbs. | lbs. |
| Buwalasi ... ... .. | 25,890 | 13,290 |
| Bubulu ... ... ... | 6,865 | 10,620 |
| | 32,755 | 23,910 |

"Thus a good deal of the crop was prepared by the natives themselves, the resulting parchment being inferior to that prepared at the pulpers. Prices obtained varied from 20 to 30 cents per lb. of parchment, on the average, a large drop from the 40 to 60 cents which many growers obtained in 1924.

"The Lukiko experimental plots, devised to test the relative merits of shade and no shade, have been maintained, but no conclusions can be drawn at present, as the trees have not yet come in to proper bearing. Next year these trees will provide seed for sowing in the central nursery beds."

The position as regards the extension of the *C. Robusta* industry is shown in the Botanist's report, and preparations are well in hand for a considerable extension of this work during 1926.

## Rubber (Hevea Braziliensis).

10. Prices were maintained at a comparatively high level throughout the year and many estates which were more or less derelict were brought back into cultivation.

The revival of the market has been a great boon to European planters, and exports during the year reached a total of 805,800 lbs. valued at £68,704, as compared with 608,300 lbs. valued at £18,911 for 1924.

Market reports on this product have been very satisfactory, and the finer grades are reported upon as being equal in appearance and quality to the finest rubber on the London market.

## Other Crops.

11. *Sugar.*—The production of centrifugal sugar has continued at the Lugazi factory throughout the year, and in addition to large quantities used for local consumption, the Customs returns show that 4,053 cwts. valued at £7,447 were exported from Mombasa during the year. The figures for the previous year were 319 cwts. and £698 respectively.

12. *Rice.*—A considerable quantity of rice is grown in the Budama District of the Eastern Province and it is also cultivated on a smaller scale in the Bugwere and Bugishu Districts, and in the Bwamba County of Toro.

Provided other crops have been favourable, the natives of Budama prefer to store the rice in the husk as a reserve, either for future use as food or for sale when times are hard. The quantity consumed by the natives themselves increases each year, and rice is rapidly taking its place as one of the staple foods of the people of this district.

Arrangements are being made to extend the cultivation of this crop in the Pallisa County of Bugwere District, and over 2,000 lbs. of seed was distributed.

13. *Tea.*—The production of tea in any quantity is limited to one European estate in the Mubende District, and the whole of the output is consumed locally and in Kenya Colony.

Four new varieties were introduced from India early in the year. Germination was in most cases good, and small experimental plots are now being established on the Government Plantation, Kampala.

14. *Tobacco.*—A member of the staff of this Department was sent to Nyasaland in September to study the methods adopted in the cultivation and treatment of this crop in that country, and on his return to Uganda it is hoped to devote more attention to the possibilities connected with tobacco in Uganda.

Several varieties have been experimented with on the Serere Plantation during the year, but these were mostly raised for seed purposes. A small quantity of uncured leaf found a ready sale locally.

15. *Chillies.*—Owing to low prices and in consequence of the largely increased earnings of the natives from the cultivation of cotton, the export of chillies fell to 2,257 cwts. valued at £2,935, or approximately one tenth of the figures for the previous year.

16. *Wheat.*—Further experimental work was carried out in the Toro District, and on the foothills of Mount Elgon. In the last named area the experiments mentioned in the 1924 report proved very successful and a good crop was harvested, and this has been reserved for wider distribution in 1926.

17. *Cacao.*—The export of this crop was practically negligible, *i.e.*, 115 cwts. valued at £311. Records of yields of plots in the Botanic Gardens, Entebbe, will be found under the heading "Government Plantations."

18. *Oil Seeds.*—Simsim valued at £4,523 and groundnuts at £820 both figure in the list of exports, but as in the case of other marketable crops, the quantities available for export are governed by market prices and the size and value of the annual cotton crop.

## Native Ploughing.

19. In the Eastern Province the number of ploughs in use shows a considerable increase when compared with the previous year, and additional ploughing schools have been opened at various centres. These schools are under the supervision of European Ploughing Instructors, and the work undertaken includes the training of both man and beast. Natives are trained to handle the plough to the best advantage, and they also receive instruction in the handling of cattle and in correct setting and upkeep of implements. Cattle are broken and trained to the work for native owners.

A census of native-owned ploughs in the Eastern Province taken at the end of the year shows the distribution to be as below, and these figures do not include smaller numbers of ploughs in use in other districts of the Province. For the purpose of comparison figures for the two previous years are also shown:—

| District | County. | Number of Ploughs 1925. | Number of Ploughs 1924. | Number of Ploughs 1923. |
|---|---|---|---|---|
| Teso ... ... | Kumi | 1,154 | 481 | 191 |
| „ ... ... | Serere | 81 | 33 | 19 |
| „ ... ... | Usuku | 269 | 101 | 35 |
| „ ... ... | Soroti | 176 | 119 | 37 |
| Lango ... | Kumam | 94 | 35 | 5 |
| „ .. ... | Other counties | 36 | — | — |
| Budama ... | — | 30 | — | — |
| | TOTALS | 1,840 | 769 | 287 |

With few exceptions the plough in general use is a standard single furrow type of English manufacture, it is thus possible for stockists to keep on hand the necessary supply of shares and other spare parts.

A new ploughing school was established at Kaberamaido in Lango District in April, and by the end of the year 100 natives had been trained as ploughmen, and over 230 oxen had been broken. Two additional schools were also opened in the Teso District.

In Buganda Province no further progress was made, and although the school at Masaka was maintained throughout the year, the interest shown by the local natives was negligible.

## Food Crops.

20. In areas where the staple food is grain, the uprooting of the old cotton plants coincides with the sowing of the main food crop. The grain (small millet), is sown either prior to, or immediately after the uprooting of the cotton, and it will thus be seen that the area under food each year is to a large extent governed by the area under cotton. In districts where the banana is the staple diet this is not so much the case, but the practices of planting up the old cotton plots with food crops of some variety is universal and undoubtedly has a direct influence on the available food supplies.

Taking the country as a whole food supplies have been satisfactory, and grain stores (famine reserve) in the Eastern Province are well stocked.

## Government Plantations.

21. In addition to the Botanic Gardens at Entebbe, there are nine experimental stations under the Department's control, *viz.*, Kampala, Kakumiro, Serere, Simsa, Bukalasa, Toro, Masaka, Lira, and Busaba, the last named two having been opened during the year under review. Five of these are situated in Buganda, four in the Eastern Province, and one in the Western Province.

The bulk of the cotton selection work is done at the Serere station, whilst work in connection with coffee and other economic crops is carried on mainly at Kampala.

The following are extracts from reports by the various Officers in charge :—

**Botanic Gardens, Entebbe.**

"Weather.—The weather conditions for the year were rather abnormal, for the months in which a heavy rainfall is usually recorded only registered a small amount of rain, and *vice versa*.

"January, which is a very dry month, recorded 5·11 inches, and May, which is usually the wettest month of the year, only registered 3·57 inches.

"The wettest month was April when 9·17 inches of rain were recorded, and the driest was July when only 0·93 inch of rain fell.

"The total fall for the period was below normal, only 53·68 inches having been recorded. The number of days on which rain fell was 152, the highest for one day being on the 31st March when 3·46 inches were recorded which fell in 2 hours 30 minutes.

"Distribution of Plants and Seeds.—There was another big demand for decorative plants during the year, the number distributed being only 150 below last year's distribution which was a record for decorative plants sent out from the Gardens.

"The number of requests for fruit trees and seeds during the free distribution in April was low, only 27 requests having been received.

"The following are the totals of plants and seeds distributed :—

| Plants. | | Seeds. | | Bundles. | |
|---|---|---|---|---|---|
| Economic. | Decorative. | Economic. | Decorative. | Lawn Grass. | Verbena. |
| C. Robusta 18,000<br>Various 5,077 | 10,115 | 87 packets. | 328 packets. | 29 | 16 |

"Introduction of Plants.—A large variety of seeds were received during the year and the following list contains the number of packets contributed by the donors to whom thanks are accorded for their assistance :—

| | | |
|---|---|---|
| 19 | packets | The Director of Agriculture, Botanic Gardens, Melbourne, Australia. |
| 11 | do | The Director of Agriculture, Tanganyika Territory. |
| 11 | do | The Director of Gardens, Singapore, Straits Settlements. |
| 49 | do | The Curator, Brooklyn Botanic Gardens, U.S.A. |
| 19 | do | Dame Alice Godman, Horsham, Surrey, Engand. |
| 158 | do | T. D. Maitland, Esq., M.B.E., Government Botanist, Kampala. |
| 5 | do | Mrs. Longdon, Kampala. |
| 8 | do | R. A. Gibson, Esq., Jinja. |

The following list gives most of the seeds that have germinated up to the present :—

Acanthus 4 species.
Adesnostroma 2 species.
Albizzia 2 species.
Astrochlaema malvacea.
Aster novi belgii 6 varieties.
Aster Pattersonii.
Astralagus 2 species.
Buddleia 3 species.
Brillantasia sp.
Capparis spinosa.
Celosia plumosa.
Campanula carpatica.
do rotundifolia.
Cassia mimosoides.
Cassia sp.
Catapa bignonioides.
Combretum sp.
Clematis tanguticus.
do virginiana.
Clitoria ternatea var. alba.
Crotolaria 5 species.
Cyrtostachys Lakka.
Echinopsis niveum.
Eranthemum sp.
Eriosema cajamoides.
Eucalyptus corymocalyx.
Garcinia mangostana.
Gerbera sp.
Gleditschia triachanthos.
Helichrysum sp.
Hieracium aurantiacum.
Hibiscus sp.
Inula Helenium.
Impatiens sp.
Ipomoea 10 species.
Jasminum sp.
Jatropha curcas.
Kentia Woodfordii.
Lancium domesticum.
Lathyrus latifolius.
Ligustrum vulgare var. atrovirens.
do Ibota var. Regelianum.
Lobelia cardinalis.
Nephelium malaiense.
Pavetta 2 species.
Pentas 3 species.
Penstemon laevigatus var. Digitalis.
Pycnostachys sp.
Richardia africana.
Salvia argentia.
Scabiosa artropurpureum.
Silene armeria.
Solanum 2 species.
Smithia sp.
Strychnos volkensis.
Swainsona coronillifolia.
Tephrosia sp.
Thunbergia sp.
Trachelium caeruleum.
Veratum nigrum.
Vernonia sp.
Viscarea graeca.

"Cacao.—The records of pod production for the year from all the plots are given in the tables below.

"The year has not been a favourable one for cacao as will be seen from the records which show a decrease in pod production from nearly all the plots.

"It will be observed on comparing previous records with the rainfall records, that a year in which there was a good rainfall also recorded a good crop, it therefore seems apparent that the rainfall for the period which was well below normal, is the reason for the decrease in pod production.

"The highest pod production from one tree was 195, the tree being No. 34 of Plot No. 3. Full details concerning the pod production and yield of dry cacao, etc., of this tree will be found in Table V of individual records of selected trees."

## CACAO.

### Value of Trees in Each Plot in Pod Production and Total Yields, 1925.

| Plot | Variety. | Number of trees which gave a yield of | | | | | | | | Total No. of Trees | Total Yield of Pods. | Average No. of Pods per Tree. | Total Yield Dry Cacao Beans lbs. | Average No. of Pods to 1 lb. of Dry Cacao. | Average Yield of Dry Cacao Beans per Tree lbs. | Distance of Planting | Yield per acre Dry Cacao. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pods Nil. | Pods under 5 | Pods 5 to 10 | Pods 11 to 25 | Pods 26 to 50 | Pods 51 to 100 | Pods 101 to 150 | Pods Over 150 | | | | | | | | |
| I. | Calabacillo | 1 | 8 | 1 | 6 | 6 | 5 | 1 | — | 28 | 862 | 30·8 | 49¼ | 17·6 | 1·7 | 18 by 18 | 228 |
| | Forastero | 4 | 2 | 2 | 3 | 3 | 3 | — | — | 17 | 359 | 21·1 | 21 | 17·1 | 1·2 | 18 by 18 | 161 |
| II. | Calabacillo | 2 | 2 | 1 | 5 | 3 | 2 | — | — | 15 | 312 | 20·8 | 19½ | 16·0 | 1·3 | 18 by 18 | 174 |
| | Forastero | — | — | 3 | 3 | 3 | 2 | — | — | 11 | 361 | 32·8 | 20½ | 17·6 | 1·8 | 18 by 18 | 241 |
| III. | Calabacillo | 2 | 2 | 4 | 11 | 12 | 5 | 2 | — | 38 | 1243 | 32·7 | 61¼ | 20·4 | 1·6 | 15 by 15 | 309 |
| | Forastero | — | 2 | 1 | 15 | 5 | 9 | 2 | 1 | 35 | 1461 | 41·7 | 67¾ | 21·6 | 1·9 | 15 by 15 | 367 |

### Individual Records, 1925—Selected Trees.

| Plot. | Number of Tree. | Total No. of Pods. | Weight of Pods. lbs. | Average Weight of Pod. ozs. | Total Yield of Dry Cacao lbs. | Average No. of Pods to 1 lb. of Dry Cacao. | Per cent of Dry Cacao to total weight of Pods | Total Pod production since 1917. | Average Yield of Pods per Year. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| I. | 7 | 67 | 41¼ | 9·9 | 4 | 16·7 | 9·6% | 1,838 | 160 | Calabacillo, Yellow Variety. |
| | 82 | 34 | 16 | 7·5 | 1½ | 22·6 | 11·2% | 1,204 | 134 | do. Red do. |
| II. | 50 | 90 | 42¼ | 7·5 | 5¼ | 17·2 | 12·7% | 801 | 89 | Forastero, Red Variety. |
| | 57 | 20 | 13 | 10·4 | 1¼ | 16·0 | 10·8% | 449 | 50 | Calabacillo do. |
| | 67 | 26 | 17 | 10·5 | 1½ | 17·4 | 10·6% | 891 | 99 | do Yellow Variety. |
| | | | | | | | | Since 1922 | | |
| III. | 2 | 33 | 22½ | 10·9 | 2 | 16·0 | 8·8% | 249 | 62 | Calabacillo, Red Variety. |
| | 4 | 143 | 94¼ | 9·2 | 6¼ | 22·8 | 6·8% | 647 | 162 | Forastero, do. |
| | 34 | 195 | 107½ | 8·8 | 10 | 19·5 | 9·3% | 403 | 101 | do. Yellow Variety. |
| | 41 | 111 | 49½ | 7·1 | 5½ | 20·2 | 11·6% | 440 | 110 | do. do. |

**Kampala Plantation.**

In his annual report the Manager writes as follows:—

"Coffee.—Owing to the importance of *Coffea robusta* in the country at present, chief attention was paid to this type.

"The demand from both Europeans and natives for seeds and plants of *C. robusta* far exceeds the quantity available from selected plants. Several plots have been planted up with good selections from No. 9, and in a year or so there should be ample for all requirements. These plots also will be utilized for further selection work.

"Various outstanding types of *C. robusta* that have been collected from native sources by the Botanist, are being raised in the nursery for stock purposes and selection.

"The system of allowing the *C. robusta* freedom in growth is showing results in good crops, and a good production of healthy suckers which will eventually become the bearers of the crop, when the present branches are finished. By this means a continually bearing plant with new wood is obtained.

"The record of the Toro plot is given here being the only one of which complete records have been kept for many years:—

| | | | |
|---|---|---|---|
| *Number of Plot* ... ... | 1 | *Area* ... ... ... ... | ·62 |
| *Origin* ... ... | Toro or Congo | *Date Planted* ... ... | March, 1914 |
| *Number of Trees* ... ... ... | 190 | *Distance apart* ... ... | 12 feet by 12 feet. |

*Average Yield of Parchment Coffee in lbs.*:—

| Per Tree. | lbs. | Per Acre. | lbs. |
|---|---|---|---|
| 1916—17 ... ... | 2·00 | 1916 ... ... ... ... | 604 |
| 1917—18 ... ... | 4·5 | 1917 ... ... ... ... | 1,359 |
| 1918—19 ... ... | 0·85 | 1918 ... ... ... ... | 258 |
| 1919—20 ... ... | 1·10 | 1919 ... ... ... ... | 333 |
| 9 months 1920 ... | 1·65 | 9 months 1920 ... ... ... | 505 |
| 1921 ... ... | 1·24 | 1921 ... ... ... ... | 581 |
| 1922 ... ... | 1·32 | 1922 ... ... ... ... | 366 |
| 1923 ... ... | 1·96 | 1923 ... ... ... ... | 289 |
| 1924 ... ... | 2·94 | 1924 ... ... ... ... | 887 |
| 1925 ... ... | 4·83 | 1925 ... ... ... ... | 1,263 |
| Yearly average for period | 2·14 | Yearly average for period ... ... | 645 |

"Para Rubber.—In July an experiment was commenced at the request of the Uganda Planters' Association to compare the value of the Sculfer knife with that of the one in general use here—the Burgess. As our tappers were not familiar with the Sculfer the first few months of tapping cannot be relied on but as they become accustomed to it interesting information may become available. At the end of the year the yields obtained were in favour of the Burgess. There are four series of 35 trees each in this experiment being tapped as follows:—

| | | |
|---|---|---|
| No. 1 ... | ... ½ left hand cut | alternate days with Burgess knife. |
| No. 1A. .. | ... do | alternate days with Sculfer knife. |
| No. 2 ... | ... ⅓ left hand cut | daily with Burgess knife. |
| No. 2A. ... | ... do | daily with Sculfer knife. |

"Sweet Potato Tests.—A plot of approximately ¾ acre in size was planted up with fourteen varieties of sweet potatoes in April, and at the end of the year the crop was being reaped. As it was found desirable to arrange the varieties on the chess board system, a new area of an acre was planted up in September with these fourteen varieties, each variety being planted in three different situations in the area making in all forty-two plots. At the end of the year these plots showed healthy and strong growth.

"Tea.—No definite experimental work has been done in the established plots as the arrangement of these is unsuitable. Four new varieties of tea were imported early in the year and sown in the nurseries. Germination was good except in the Assam indigenous of which we have only a dozen fair plants. Of the others, Kalline, Thamai, and Manipuri there are enough good plants for our purpose and distribution. A plot of approximately an acre is being prepared and divided up into small blocks numbering 32, and these will be planted up with the last three introduced varieties and plants raised from seed of the established tea. Each variety will be planted in eight blocks of thirty-six trees in various situations in the plot so that soil conditions will be more or less the same for each variety. On this plot being established we can then carry out useful experimental work with regard to this crop."

**Serere Plantation.**

Reports on cotton experimental work are given on page 16.

**Serere and Simsa Plantations.**

Short reports on these plantations by the Senior Agricultural Officer, Mr. Harper, will be found on pages 30 and 31.

## Agricultural Shows.

22. Two very successful shows were held during the year, one in Bunyoro, and one in Lango District.

The show in Bunyoro was held at Hoima on December 4th and 5th, and the exhibits numbered approximately 2,000. The natives of the district showed a keen interest, and the display of agricultural produce and native handicrafts was creditable.

There was a representative collection of exhibits at the Lango show which was well attended by the local natives.

## Agricultural Education.

23. An Officer of the Department has now been detailed to work in co-operation with the Educational staff at Makerere College, and other Officers of the Scientific Division of the Department are also helping in this direction.

Instruction of a more elementary nature is being given on several of the plantations under the control of this Department, and a large number of pupils are passed through each year.

The following is an extract from the the Senior Agricultural Officer's report on Serere Plantation and shows the methods adopted in this connection :—

"Training and Instruction.—The training of selected youths from Teso and adjoining districts, which was begun in 1924, made satisfactory progress during the past year.

The numbers enrolled were as follows :—

| | |
|---|---|
| Teso District ... ... ... ... ... | 41 |
| Lango District ... ... ... ... | 11 |
| Bugwere District ... ... ... ... | 2 |
| Total ... .. .. ... | 54 |

"In addition to the above, a further eleven Lango youths who had enrolled late in 1924, returned to Serere in April to complete the course, and nineteen youths from Bugwere District and ten from Lango District attended a month's course in cotton picking and grading.

"The following is the procedure now adopted in this work :—

"The session begins on 1st April and ends on 31st January.

"Pupils are in continuous residence at Serere throughout the course, but may be granted leave in two periods of two weeks each, if their conduct is good. They are paid a monthly wage of Sh. 8 and food. They may be summarily dismissed for flagrant misconduct.

"The course includes practical work in the field, and the pupils are expected to take part in all the operations connected with successful crop raising. In addition a weekly lecture is given by the Agricultural Officer on general agriculture, by the Cotton Botanist on plant and seed selection, and by the Ploughing Instructor on the treatment and care of livestock. These lectures are made as simple as possible, the object being to explain to the pupils the reasons and aims underlying all the operations in the field, constituting the term—good husbandry."

## British Empire Exhibition.

24. Uganda was again represented at Wembley in 1925, and much interest was shown in the representative collection of exhibits which included cotton, coffee, fibres, timbers, and numerous other products of the country.

Although no immediate results may be seen for some time to come, Uganda undoubtedly did its share in making known to a large section of the British public, the possibilities of our overseas possessions.

## Botany, Entomology and Mycology.

25. The reports of the Botanist, Entomologist and Mycologist are enclosed.

## Agricultural Chemistry.

26. A Chemist was appointed to the Staff in December, 1924, but during the year under review he has, through the lack of laboratory accommodation, been unable to carry out any quantitative analyses. A small number of qualitative analyses of insecticides have however been completed.

The following extract is from the Chemist's report:—

"Synthetic Farmyard Manure.—In February I sent samples of two common local grasses ('Lusenke' and Elephant) to the Agricultural Developments Company, Ltd., Rothamsted, for a report as to their suitability for conversion by the ADCO process into synthetic farmyard manure. The report of the technical expert of the Company No. 1 is appended. It will be seen that the report is favourable particularly in respect of 'Lusenke.' A quantity of No. 3. ADCO has been ordered and trials will be carried out as soon as it arrives. As most of our soils are deficient in humus I believe that this manure will prove to be of great value in Uganda particularly to Planters.

"Plot Experiments.—A number of small-scale plot trials on the liming and green manuring of cotton have been strated at Serere, Bukalasa, and Masaka, and will be continued for several seasons. As the harvest of the past season's crop is not yet completed, no records of yields are available. An experiment on the liming of coffee has been started on the Kampala Plantation and a similar trial has been started on the Hoima River Estate. It is hoped that most of the plot experiments on coffee will be carried out on estates in European hands because the data accumulated will be of value mainly to them. The writer will welcome every opportunity of co-operating with planters in the carrying out of experiments designed to yield useful information."

### Plant Pests Board.

27. The Plant Pests Board met regularly during the year.

### Agricultural Statistics and Meteorological Returns.

28. Full details are to be found in the appendices at the end of this report.

### Staff.

29. In July Mr. S. Simpson was appointed to be an official member of the Executive and Legislative Councils of the Protectorate and it is pleasing to record here that prior to this report going to print his appointment to be a Companion of the Most Distinguished Order of St. Michael and St. George was *Gazetted* amongst the New Year's Honours (1926).

30. I desire to record my appreciation of the services rendered by all members of the staff during the year.

L. HEWETT,
*Acting Director of Agriculture.*

## ANNUAL REPORT OF THE BOTANIST.

I returned to the country from my duties at the British Empire Exhibition at the beginning of February.

2. My duties have consisted of the supervision of the Kampala Plantation, the Botanic Gardens, Entebbe, and district agriculture in addition to my botanical work.

3. I submitted a report on the organisation of the experimental work of the Plantation at Kampala and the plans agreed to were being carried out.

4. The respective Plantation Managers have each submitted their reports separately and they show the comprehensive nature of the work carried on.

5. With regard to the Plantation at Kampala, there has been some difficulty in getting sufficient and suitable plots for test work. The plots are made as small as is possible and compatible with reliable yields.

6. *Coffee robusta* work has taken up a great deal of time both in setting out of trial plots of our several selections, and in the amount of nursery work done to meet the demands for plants.

7. Although we have had requests from the European planters for *Robusta* seeds and plants, most demands have come from natives and indeed our *Robusta* work is largely a native industry. This matter is however dealt with under a separate heading.

8. The *Robusta* selections referred to are No. 9. Work was, however, commenced on a fresh line as K. (Kinawa) I, K. II, E. (Enoka) I and E. II.

9. The most promising of these new types is K. I, which is indeed a fine type of tree, with a good habit, a bold bean and from all appearances a precocious yielder. The others are of interest as they show considerable varietal differences, as for instance, in the shape and size of the bean, size and colour of the cherry and in general habit. Seedlings of these respective types were being raised and plots reserved for planting them out for observation and further selective work.

10. Much time has been devoted to food crops. It is important to know where we stand with the respective varieties of these crops. The test plots of matoke or bananas made of 26 varieties, the sweet potatoes of 14 varieties and the cassava of 8 varieties, all collected in the country, will enable a study of the comparative utility of the kinds to be undertaken.

### Cover Crops and Green Manures.

11. A fairly comprehensive collection of leguminous plants was gathered together and laid down for preliminary tests in respect to suitability as cover-crops and green manures. The list includes some well known food plants and some cover-crops which have been used on the plantation for many years; but it also includes a number of plants which occur wild in the neighbourhood and several that were collected during visits to outlying regions in connection with botanical work.

Preliminary observations made on the respective types were recorded and include (1) time taken in germination, (2) period to flowering stage, (3) period to maximum vegetative stage, (4) number of seeds to the gram, and (5) notes with regard to utility.

Further the plants are grouped according to the nature of their growth, *i.e.*, climbing or erect, and under food crops and non-food crops.

The information recorded should be helpful as such plants as are here dealt with could play a very important part in agricultural practice. A good deal of interest has been shown by planters in these crops and especially these low-growing types suitable as cover crops for coffee.

The number of seed to the gram indicates the size of the seed and is a guide as to whether a particular crop would be suitable or not for sowing in land which is rather weedy. Generally speaking the small seeded species are not vigorous at the start and would therefore not be able to compete with the weed crop.

The periods to maximum vegetative growth are also helpful as they show how far the crops can be fitted into rotation and when the full benefit could be got from digging in for green manuring.

Crops such as "Mpindi" *Vigna catiang*, "Dhal" *Cajanus indicus* and several Phaseolus spp. and Dolichos are very suitable for rotation in native agriculture as they are all food crops, and particularly the "Mpindi" as it will provide a harvest of beans before it need be dug in as a green manure.

It is proposed to lay down these crops again during the coming year in order to record yields of green materials and degree of nodular affection, and to add some other types which are likely to prove of interest. The information so obtained will be published in the form of a separate bulletin in due course.

## Grasses.

12. So far very little is known about the grasses of the country, apart from the observations made in the field by stock owners and Veterinary Officers. We have had enquiries from time to time as to the utility of certain grasses and specimens have been received for report. In order to gain some knowledge about our principal types a collection was made and put down for preliminary observations in small plots 8 feet by 38 feet, and what information has so far been got is recorded in Appendix No 2.

The weather conditions following the planting of the plots were far from favourable, consequently a number of the types failed completely, whilst in others growth was so uneven that it was impossible to carry out cutting tests with any reliability in results.

The cutting tests which were done were carried out on half the plot, the remaining half being left to grow on naturally. The results have been very interesting. In some instances where in the ordinary way the grass would dry up after flowering, the cutting has induced a fresh vegetative condition, so that in the same plot, one half is in a lush condition, whilst the other is dry and in an unattractive state for stock.

When all the plots have been established equally and the cutting tests recommenced the grass will be weighed and thus some idea of the yield will be gained.

Besides this information will be valuable in connection with enquiries which have come forward on the matter of the production of alcohol from some of our strong and vigorous grasses.

Apart from this we shall see how the respective types behave under the repeated cuttings and how long they will remain pure.

It has already been noticed that some have become very weedy, whilst others have more than maintained their position. *Pennisetum purpureum*, *Hyparrhenia rufa*, and *H. cimbaria*, Panicum maximum, *P. trichocladium*, Cynodon plectoslacthyon, and *Brachiaria brizantha* are noticeable cases of the latter.

## Native Agriculture.

### (Coffee robusta).

13. A great deal of attention has been given this year to the development of *Coffee robusta* cultivation among the natives, with the result that interest in it has been widened. Natives have come long distances for plants and with requests for 100, 200 and as many as 500 plants.

Development work has hitherto been confined to the Buganda region but steps were taken towards the end of the year to extend the work. New nurseries have been established out in the districts and arrangements were being made to have nurseries at various convenient centres so as to embrace the whole region suitable for *Robusta*.

Additional nurseries were created and a coffee sub-instructor appointed to each Gombolola in the Sese group of islands.

Earlier in the year the Buvuma Islands were visited to ascertain what the prospects are there for Coffee *robusta* development, and consequently a coffee instructor was appointed to assist the natives and to attend to the distribution of plants.

The following table shows concisely the position as it was at the end of the year with respect to the location of coffee nurseries, the distribution of plants, and plants available for distribution:—

DISTRIBUTION OF COFFEE ROBUSTA NURSERIES, 1925.

| Sese Island Group. | Buvuma Island Group. | Mainland Group. |
|---|---|---|
| Bugala Island 2 Nurseries ... | Buvuma Island 2 Nurseries ... | Masaka 5 Nurseries. |
| Buninga do 1 Nursery ... | Kibibi do 1 Nursery ... | Busiro 2 Nurseries. |
| Bubemde do 1 Nursery . | | Mengo 1 Nursery. |
| Bufumira do 1 Nursery ... | | Kyagwe 2 Nurseries. |
| Bukasa do 1 Nursery ... | | Bulemezi 2 Nurseries. |
| Kome do 2 Nurseries ... | | Gomba 1 Nursery. |
| | | Bwamba, Toro 4 Nurseries. |
| 8 | 3 | 17 |

DISTRIBUTION OF ROBUSTA PLANTS, 1925.

| Sese. | Mainland Lake Region. | Masaka | Total. |
|---|---|---|---|
| 124,000 | 76,000 | 111,000 | 311,000 |

NUMBER OF PLANTS AVAILABLE FOR DISTRIBUTION END OF 1925.

| Sese. | Masaka | Mainland Lake Region. | Bwamba. | Total. |
|---|---|---|---|---|
| 80,000 | 100,000 | 13,000 | 31,000 | 224,000 |

## District Agricultural Work.

14. In addition to the Sese, Kome and Buvuma group of islands to which I have already referred, the Masaka and Mbarara regions were visited and also the Toro-Bwamba region with a view to ascertaining what further Coffee *robusta* development could be undertaken.

As a result, practically the whole of the areas within the Protectorate suitable for *Robusta* have come within the scope of our development work.

## Botanical.

15. During the trip to these respective regions, I have taken the opportunity of collecting material for the herbarium and I have thus been able to get together a fairly comprehensive representation of the flora. The herbarium work has been greatly hindered for lack of accommodation and I have had during the course of the year to remove all the material from Entebbe to Kampala, as a result of having to vacate our office owing to its having been included in the new Secretariat.

The position has not been any better in Kampala and consequently I have the herbarium stored in my own house.

The herbarium work is becoming more important year by year as our experimental work develops and research work on fungoid and insect pests proceeds.

During the year observations have been made on the distribution of *Malvaceous* plants in connection with cotton insect pests, canthiums and other allied *Rubiaceous* plants in connection with the distribution of the "coffee bug," *Antestia orbitalis*, and the distribution of *Coffeas* in connection with coffee work.

With respect to *Malvaceous* plants, it has been observed that *Hibiscus diversifolius* Jacq., on which a pink boll-worm has been found, is widely distributed. Its usual habitat is in swampy land, and along banks of rivers and it occurs frequently in the Buganda region under such conditions, but a form of this species has been found on Ruwenzori above Ibanda on the mountain slope and away from aquatic or swampy conditions. The species has two colour forms, the yellow the most frequent, and the purplish pink. This latter was found to be frequent in plants on the banks of the Ruisi River, Mbarara, in plants in swamps in the Toro Forest region down to the Kagera River and was the only colour observed on the plants already referred to on Ruwenzori, but it is not a form which has so far been observed to occur in the Lake region.

The *Canthiums* on which the coffee bug, *Antestia orbitalis*, has been found to feed are common plants on the islands and along the mainland shore, *Canthium golungense*, Hiern., *var. parvifolia*, seems confined to this area. The other species, so far undetermined, but all closely allied differing mostly in the size of the leaves and fruits are found further afield. They are all found however in areas where coffee is under cultivation or are found in a wild state in the forests.

T. D. MAITLAND,
*Botanist.*

# ANNUAL REPORT OF THE COTTON BOTANIST, SERERE EXPERIMENTAL STATION.

## Introduction.

This report must of necessity be incomplete as the results of the various experiments commenced during the year are not yet to hand.

For the sake of continuity the work of the last two months of 1924 is included.

Residence was taken up at Serere at the end of October, 1924, from which time the work of cotton breeding and selection was carried on.

## Initial Work of Selection.

The first two months were spent in making field examination of the various types of cotton growing at Serere available for selection work, and in taking over from the Senior Agricultural Officer the results he had already obtained.

It was seen at once that the average yield per acre of cotton over the whole country was very low and as a result the chief aim in the selection work would have to be to increase the yield by the selecting out of strains resistant to bud and boll shedding, at the same time it was realized that great care would have to be taken not to increase the yield at the expense of the quality—quality including lint length and strength. This is only too easy to do as it is an established fact that the high yielding varieties and strains as a whole are short stapled and poor in quality.

As a result of this field examination a number of promising plants were selected at Serere from the following varieties and strains of upland cotton :—

Nyasaland Nos. 5, 12, 15, 17, 24, and 31.
Salisbury.
Sunflower 5.
Webber Upland.
Meade.

Twenty-five plants were selected in all and each one was self fertilised by tying up the flowers early every morning. Self fertilising is an absolute necessity for the production of a pure strain which is one of the chief aims in selection work.

Bolls from these plants were collected separately and examined in the laboratory, the following characters being recorded :—

Loculus number.
Seeds for loculus.
Weight seed cotton per boll.
Weight lint per boll.
Lint length.

As a result of the above examination a number of the selected plants were eliminated as being below the required standard and twelve plants only were retained for growing in progeny rows in 1925-1926.

During the same period a few outstanding plants were selected from native plots at Kyere, Kateta and Labori, these unfortunately could not be self fertilised and no records could be kept.

A summary of the more important characters of the selected plants is appended below :—

TABLE I.

| Strain. | Bolls picked (good). | Total weight of seed cotton in grms. | Mean loculus No. | Mean seeds per lock. | Mean weight seed cotton per boll (grms). | Mean weight lint per boll. | Mean lint index. | Mean lint length (m.m.) | Mean ginning out-turn. |
|---|---|---|---|---|---|---|---|---|---|
| S. G. 1 | 34 | 120 | 4·3 | 6·9 | 4·41 | 1·08 | 3·62 | 33·6 | 24·5 |
| S. G. 2 | 15 | 99 | 4·6 | 6·9 | 3·96 | 1·37 | 4·95 | 30·20 | 35·20 |
| S. G. 3 | 34 | 277 | 4·25 | 8·9 | 7·38 | 2·38 | 6·25 | 29·6 | 32·30 |
| S. G. 5 | 20 | 195 | 4·4 | 8·5 | 6·58 | 2·58 | ... | 28·7 | 39·2 |
| S. G. 7 | 15 | 81 | ... | ... | 6·12 | 2·04 | 5·25 | 27·7 | 33·3 |
| S. G. 11 | 31 | 163 | 4·06 | 9·9 | 6·4 | 2·03 | ... | 27·6 | 31·7 |
| S. G. 13 | ... | ... | ... | ... | 4·8 | 1·44 | ... | 29·7 | 30·0 |
| S. G. 15 | 34 | 180 | 4·3 | 7·74 | 6·77 | 1·86 | 5·56 | 34·9 | 27·5 |
| S. G. 19 | 19 | 230 | 4·4 | 9·07 | 7·54 | 2·66 | 6·1 | 30·3 | 35·3 |
| S. G. 20 | ... | ... | ... | ... | 5·5 | 1·75 | 5·46 | 31·7 | 31·8 |
| S. G. 21 | ... | ... | ... | ... | ... | ... | ... | 33·0 | ... |
| S. G. 24 | ... | ... | ... | ... | ... | ... | 5·15 | 30·51 | 30·56 |
| K. G. 2 | ... | ... | ... | ... | ... | ... | 4·75 | 30·6 | 31·8 |
| K. G. 3 | ... | ... | ... | ... | ... | ... | 5·38 | 30·1 | 31·7 |
| L. G. 3 | ... | ... | ... | ... | ... | ... | 4·00 | ... | 28·5 |
| L. G. 4 | ... | ... | ... | ... | ... | ... | 5·15 | ... | 32·5 |

Each selected plant was given a serial number as in the above table—A.G. signifying "Serere Gossypium." This method is adopted to guard against any muddling likely to occur if two strains of the same number were to be grown in the same year, and also to prevent bias on the part of the observer. To gain familiarity with the type of cotton at present in general cultivation, samples were obtained from most of the ginneries in Teso District and these were examined thoroughly as far as the temporary laboratory conditions permitted.

*Selection of Progeny Rows grown from plants selected 1923-24 by the Senior Agricultural Officer.*—These rows were selected for growing in quarter-acre increase plots during 1925-26.

The seed cotton from each of the Nyasaland rows was examined in the laboratory and as a result of this examination together with the results of field observations, seven rows were selected as being most likely to be superior in quality to the strain No. 17 while at the same time giving an increased yield.

Table 2 below gives a summary of the results of the examination of the seven selected rows.

TABLE 2.

| Strain. | Lustre. | Strength. | Seed weight (100 seeds.) | Lint index. | Ginning outturn. | Lint length. |
|---|---|---|---|---|---|---|
| | | | grms. | | | mm. |
| N. 5 | good | medium ... ... | 11·55 | 5·15 | 30·56 | 30·51 |
| N. 7 | fair | below medium ... ... | 12·08 | 4·97 | 29·25 | 30·34 |
| N. 10 | good | ... ... ... | 11·58 | 4·79 | 29·26 | 30·08 |
| N. 11 | fair | medium ... ... | 12·58 | 5·37 | 30·18 | 30·98 |
| N. 13 | good | strong ... ... | 11·96 | 4·99 | 29·60 | 31·37 |
| N. 14 | good | strong ... ... | 12·57 | 5·58 | 30·64 | 30·17 |
| N. 15 | good | strong ... ... | 12·34 | 5·17 | 29·48 | 30·83 |

The seed purity in each case was 100%, a considerable improvement on that of No. 17.

*Selection of quarter-acre plots for propagation in 4-acre plots 1925-26.*—The most promising of the quarter-acre plots were selected by examination *in situ* and then the cotton from the best of the selected plots was fully examined, a number of bolls were picked each from a separate plant and these were recorded for the same characters as in the single plant selections (*see* above). The results of this boll analysis of three plots is summarised in Table 3 below :—

TABLE 3.

| Strain. | Loculus number. | Seed per loculus. | Seeds per boll. | Seeds cotton per boll. | Lint per boll. | Lint index. | G. O. T. | Lint length. |
|---|---|---|---|---|---|---|---|---|
| | | | | grms. | | | | mm. |
| N. 19 ... | 4·06 | 8·32 | 33·25 | 6·35 | 2·06 | 6·2 | 32·5 | 30·75 |
| N. 24 ... | 4·30 | 8·35 | 35·6 | 6·01 | 1·98 | 5·55 | 33·0 | 30·54 |
| A. 2 ... | 4·12 | 8·28 | 34·04 | 5·46 | 1·81 | 5·4 | 33·1 | 27·58 |

The above figures are the result of the examination of 100 bolls from each plot with the exception of A. 2 of which 50 bolls were examined.

Of all the quarter-acre plots only two were selected for growing in 4-acre increase plots and these were N. 19 and N. 24. The only objection to N. 24 is the presence of a large percentage of green fuzzed seeds, this is being looked into in case their presence is objectionable and anyhow further selection will have to be done on this type as the green fuzz indicates a mixed strain.

It will be noticed that no Allen and Sunflower strain has been selected, this is because it was deemed inadvisable to grow several distinct types at the same time owing to the danger of intercrossing and mixing of the seed. Nyasaland types at present are the most valuable but every year single selected rows of Allen and Sunflower will be grown so that in the event of the Nyasaland type breaking down there will be the nucleus for replacement by another type.

Samples of the plots and the progeny rows have been retained for future reference.

During the latter part of 1924 and the early part of 1925 a number of samples of seed cotton and lint were received for examination and reports.

Samples were received from :—

| | |
|---|---|
| Agricultural Officer ... ... ... ... | Soroti |
| ,, ,, ... ... ... .. | Lira |
| ,, ,, ... ... ... ... | Mbale |
| ,, ,, ... ... ... ... | Jinja |
| Head Office ... ... ... ... | Kampala |
| Agricultural Officer ... ... ... ... | Masaka |
| Bombay-Uganda Company ... ... ... | Soroti |
| Plantation Manager ... ... ... ... | Bukalasa |

The general results of these reports indicate that the staple of Uganda cotton is under $1\cdot\frac{3}{16}$ inch in length and rather irregular.

In table 4 below is given a summary of the results from each district :—

TABLE 4.

| District. | Number of samples. | Length (mm). | Seed weight (100 seeds). | Lint index. | G.O.T. | Seed purity % |
|---|---|---|---|---|---|---|
| Teso ... ... ... | 7 | 29·77 | 10·97 | 4·81 | 30·73 | 86 |
| Lango ... ... | 9 | 29·74 | 11·15 | 5·03 | 30·08 | 90 |
| Mbale ... ... | 8 | 27·94 | 11·17 | 5·00 | 30·89 | low |
| Busoga ... ... | 7 | 28·54 | 10.37 | 4·60 | 30·65 | low |
| Buganda ... ... | 7 | 27·91 | 11·01 | 5·19 | 31·96 | 75·4 |
| Northern Province ... | 3 | 28·41 | 10·93 | 4·95 | 30·60 | 88 |
| Masaka ... ... | 1 | 30·22 | 12·58 | 6·12 | 32·8 | 94 |

Altogether fifty-seven samples were reported on during the year.

## Field Experiments (1925-26).

Apart from increasing the yield per acre by the selection of improved strains it was seen that possibly a large increase could be obtained if the methods of field culture at present generally adopted by the native cultivator were to be improved or altered. With this end in view a number of field plot experiments were started dealing with sowing date, plants per hole, spacing and variety.

### Sowing Date Experiment.

From observations gathered in 1924 the impression was gained that early sown cotton in Teso at any rate, was liable to greater bud and boll shedding and straggliness than cotton sown in July and August.

The object of this experiment is to find out which is the optimum month for sowing; but at the outset, it was realized that in such a climate as is experienced in Uganda when no two seasons are the same, this experiment would have to be carried out over a large number of years, say ten, before any results of value for practical application could be obtained.

The three months June, July and August were chosen for the test, May, being left out as being obviously the worst month for sowing.

The general procedure was as follows—one acre was divided up into twelve plots each one-twelfth of an acre in area and each plot divided from its neighbours by a narrow trench; a similar trench surrounded the whole area to demarcate the plots without having to use a belt of kapenda which would necessitate the discarding of the outside rows of the outer plots.

The area chosen was free from anthills and the soil appeared to be comparatively constant, nevertheless owing to the general heterogeneity of all soils in this district it was necessary to multiply the plots and to scatter them as per figure 1 below.

Four plots were sown for each month and as near as possible the sowing day was the same for each month.

FIGURE 1.

| | | | |
|---|---|---|---|
| June | July | August | June |
| July | August | June | July |
| August | June | July | August |

The plots were sown with Nyasaland No. 17 cotton in rows three feet six inches apart and with one foot six inches between the plants in the row.

The sowing dates were as follows :—

| Plot. | Sown. | Germinated. | First flower. | First bolls. | Total gaps resown. |
|---|---|---|---|---|---|
| June ... | 9th | 15th June ... ... | 16th August ... | 6th October ... | 695 |
| July ... | 9th | ... ... ... | 9th September ... | ... ... ... | 673 |
| August ... | 10th | ... ... ... | ... | ... ... ... | .. |

There is in this experiment one unavoidable source of error, in that the plots sown late have on one or more sides of them plants which were sown in earlier months and therefore they have to face greater competition than did the plots which were sown early. The only means of overcoming this obstacle would be to have larger plots and to discard the outer rows of each plot.

After sowing, all plots were treated in the same manner and care was taken that there were the same number of rows in each plot.

As soon as the seeds in each plot had germinated ten plants in each plot were marked off and weekly growth records were taken from each plant, flowers per plant per day were recorded and the total yield from each plant also.

When this crop is completed a fuller account will be given in the separate report of experimental progress for the year which is to be produced in June or July.

## Spacing Trials.

It was noticed that the general spacing between the rows and plants as generally adopted by the native was on the wide side, the average being four feet between the row and two feet between the plants in the row.

To endeavour to ascertain the optimum for spacing in Teso District, a series of spacing trials was commenced and the following part of the series was carried out at Serere :—An acre was divided up into twenty-five plots of equal area and as in the sowing date experiment the lots were surrounded by narrow ditches. In the area occupied by these plots there were a number of ant-hills but care was taken that no one or part of one was in a plot.

The following spacings were settled on :—

| | | | |
|---|---|---|---|
| 4 ft. 0 ins. | between rows | 2 ft. 0 ins. | between plants. |
| 4 ft. 0 ins. | „ „ | 1 ft. 6 ins. | „ „ |
| 3 ft. 6 ins. | „ „ | 2 ft. 0 ins. | „ „ |
| 3 ft. 6 ins. | „ „ | 1 ft. 6 ins. | „ „ |
| 3 ft. 0 ins. | „ „ | 1 ft. 6 ins. | „ „ |

Five plots were sown of each spacing and the scatter was as in figure 2 below.

Figure 2.

| *feet. ins.* *feet. ins.* | *feet. ins.* *feet. ins.* | *feet. ins.* *feet. ins.* | *feet. ins.* *feet. ins.* | *feet. ins.* *feet. ins.* |
|---|---|---|---|---|
| 4 0 by 2 0 | 4 0 by 1 6 | 3 6 by 2 0 | 3 6 by 1 6 | 3 0 by 1 6 |
| 4 0 by 1 6 | 3 6 by 2 0 | 3 6 by 1 6 | 3 0 by 1 6 | 4 0 by 2 0 |
| 3 6 by 2 0 | 3 6 by 1 6 | 3 0 by 1 6 | 4 0 by 2 0 | 4 0 by 4 6 |
| 3 6 by 1 6 | 3 0 by 1 6 | 4 0 by 2 0 | 4 0 by 4 6 | 3 6 by 2 0 |
| 3 0 by 1 6 | 4 0 by 2 0 | 4 0 by 4 6 | 3 6 by 2 0 | 3 6 by 1 6 |

Owing to the limited staff no attempt could be made to make daily observations on these plots and apart from cursory field examinations as to incidence of pests and disease the only results will be the total yield from each plot.

As in the case of the sowing date plots so in this experiment will the plots have to be repeated over a number of years, less however in this case.

The plots were all sown on the same day, 6th July, but in next season it is intended to combine the spacing with the sowing date experiment as a spacing which is the best for May, sowing will not be necessarily the optimum for August sowing.

### Spacing Trial 2.

In Egypt and elsewhere it has been found that the leaving of two plants per hole has given a higher yield per acre than the practice of leaving one. While it was realised that a different type of cotton and entirely different climatic condition obtained where these results were found yet it was thought advisable to test at Serere the effect of leaving two plants per hole as against the native practice of leaving one only. Thus an acre was divided into six plots of equal area three of which were sown and thinned so as to leave one plant per hole while the remaining three had two plants per hole. The spacing adopted was 4 feet between the rows and 2 feet between the plants.

The plots were scattered as below in figure 3 and were sown on 8th July.

Figure 3.

| | | |
|---|---|---|
| 1 | 2 | 1 |
| 2 | 1 | 2 |

While the main experimental plots must always be at Serere where they can be under constant observation and proper supervision can be given to the picking yet it was deemed

imperative to have plots in other areas owing to the variation in soil conditions every few miles. The following plots were planted :—

## SOROTI.

### Spacing Trial 1a.

By the courtesy of the District Commissioner an acre in Soroti station was given over for experimental plots and a spacing trial was carried out.

The acre was divided into twelve plots of equal size and as at Serere they were divided by small trenches and two rows of cotton were sown right round the plot to obviate the beneficial effect of outside rows to certain plots.

The following spacings were sown :—

4 ft. between the rows, 2 ft. between plants, one plant left per hole.
4 ft. between the rows, 2 ft. between the plants, two plants left per hole.
3 ft. 6 ins. between the rows, 1 ft. 6 ins. between the plants, one plant left per hole.
3 ft. 6 ins. between the rows, 1 ft. 6 ins. between plants, two plants left per hole.

Three plots were sown at each spacing with N. 17 seed on 10th June.

The scatter of these plots is shown in figure 4.

Figure 4.

| | | | |
|---|---|---|---|
| *feet. ins.* *feet. ins.* | *feet. ins.* *feet. ins.* | *feet. ins.* *feet. ins.* | *feet. ins.* *feet. ins.* |
| 3 6 by 1 6 | 3 6 by 1 6 | 4 0 by 2 0 | 4 0 by 2 0 |
| 2 per hole | 1 per hole | 2 per hole | 1 per hole |
| 4 0 by 2 0 | 4 0 by 2 0 | 3 6 by 1 6 | 3 6 by 1 6 |
| 1 per hole | 2 per hole | 1 per hole | 2 per hole |
| 3 6 by 1 6 | 3 6 by 1 6 | 4 0 by 2 0 | 4 0 by 2 0 |
| 2 per hole | 1 per hole | 2 per hole | 1 per hole |

## SIMSA.

### Spacing Trial 2a.

Simsa was chosen for a plot experiment on account of its poor soil. An acre was divided up into eight plots of equal size, four of which were thinned to leave one plant per hole and the other four so as to leave two plants per hole.

The plots were sown in rows 3 ft. 6 ins. apart and the holes 1 ft. 6 ins. apart.

Nyasaland N. 17 was used as seed and all plots were sown on 7th July.

## KYERE GOMBOLOLA.

### Spacing Trial 2a.

The chief at Kyere co-operated with a spacing experiment as follows—an acre was divided into six plots equal in area, three of which were sown in rows 4 ft. apart with holes 2 ft. apart and the other three were sown with 3 ft. between the rows and 1 ft. 6 ins. between the plants.

All plots were sown on 16th June with N. 17 seed from Serere. The scatter of the plots was as follows :—

Figure 5.

| | | |
|---|---|---|
| *feet. ins.* *feet. ins.* | *feet. ins.* *feet. ins.* | *feet. ins.* *feet. ins.* |
| 4 0 by 2 0 | 3 0 by 1 6 | 4 0 by 2 0 |
| 3 0 by 1 6 | 4 0 by 2 0 | 3 0 by 1 6 |

### Variety Trial.

Owing to the selection of certain Nyasaland strains equal or superior in quality to No. 17 it was determined to commence a series of yield trials with a multiplication of plots, as the comparison of one plot of each type as regards the yield is open to many objections.

Three strains were taken for trial—Nyasaland Nos. 17, 19 and 24. Five plots each one-tenth acre in area were sown on 16th July in rows four feet apart and the plants 1 ft. 6 ins. apart.

The scatter of this trial is given in figure 6 below :—

| | | | | |
|---|---|---|---|---|
| N 19 | N 24 | N 17 | N 19 | N 24 |
| N 24 | N 17 | N 19 | N 24 | N 17 |
| N 17 | N 19 | N 24 | N 17 | N 19 |

A word might now be said of the difficulties attending any attempt to carry out accurate field experiments under present conditions—soil variation is very great necessitating an even greater multiplication of plots than has been attempted this year and this difficulty has been even more accentuated by the presence of anthills which renders it impossible to have all the plots in one block.

## Progeny Rows.

These are the main work connected with selection that is being carried on at the present time though in other years a certain amount of mass selection will be carried on simultaneously to obtain early results.

The main object of these rows is to test under close observation a number of selected plants and complete records are made. The seed from each selected plant or strain was sown in a row consisting of 15 plants and each strain was given a number to avoid having any danger of mixing through having more than one of the same number growing at the same time and also to avoid any bias on the part of the observer. The serial letters S. G. (Serere Gossypium) were given to all strains from Serere, whilst K. G. and L. G. were used for plants from other places.

The following types were grown in these rows:—

Nyasaland Nos. 12, 17, 17—5, 17—6, 17—7, 17—12, 17—10, 24 and 19.

| | | |
|---|---|---|
| Allen 2. | N 17 from Tanganyika | Sea Island. |
| Meade. | Webber Upland. | Cauto. |
| Salisbury. | Lonestar. | Pima. |

Selections from Kyere, Kateta and Labori.

Several first generation crosses which had been made in Trinidad, two second generations from crosses made at Serere in 1923, and several rows of native types were also grown. In all there were fifty rows with an average of 15 plants per row.

Great care was taken to self fertilise every flower produced on these rows and every morning and afternoon, Sundays included, a gang of pupils was engaged in tying up these flowers, at the same time the flowers from each plant were recorded every day and when picking commenced the bolls from each plant were picked separately and examined in the laboratory, the following characters being recorded for each:—

| | |
|---|---|
| Loculus number. | Weight seeds cotton per boll. |
| Seeds per loculus. | Weight lint per boll. |
| Lint length. | |

The produce from each plant is kept separately and although the row will be treated as a whole from the selection point of view yet the value of these individual records is very great and an index is made to the behaviour of the plants under definite conditions. Full meteorological records are kept and these will be correlated with the flowering, shedding and bolling curves.

It is hoped that time will permit for the most valuable of the selections to be analysed in the Balls cotton sorter at the end of the Season 1925-26.

The best three or four rows of these selections will be grown in increase plots under close observation during the next season and at the same time the best plants in each row will be sown in progeny rows.

It is not intended that any strain will be finally discarded until over a number of years it has proved to be inferior to existing types in cultivation. It may be that a strain will have one outstanding character of value while it is worthless in other respects in which case attempts will be made to breed this into existing strains by crossing.

## Cross Breeding.

It is fully recognised that owing to the large number of chromosomes in the cotton plant and consequently the large number of factors involved it is a long and tedious business to which an element of luck must be added, to breed out a pure strain from a cross; nevertheless it has been decided to carry on a little crossing in the future when any one outstanding character can possibly be bred into another otherwise desirable strain.

The following are the first generation crosses being grown at Serere:—

| | | | |
|---|---|---|---|
| S.G.X. 1 | Salisbury x Nyasaland 12. | T.G.X. 5 | Lonestar x Pima. |
| T.G.X. 1 | Cauto x Sea Island. | T.G.X. 6 | Acala x ,, |
| T.G.X. 2 | Meade x Sea Island. | T.G.X. 7 | Lonestar x Acala. |
| T.G.X. 3 | Sea Island x Lonestar. | T.G.X. 8 | Meade x ,, |
| T.G.X. 4 | ,, ,, x Acala. | | |

The following second generation crosses were grown:—

S.G.X. 2—1 Sakel x Webber.
S.G.X. 3—1 Nyasaland x Sakel.

## General Laboratory Work.

Apart from the routine work of collating daily and weekly observations and the examination of bolls and also samples sent in neither time nor accommodation have permitted of any real research work. In 1926 when the laboratory will be completed it will be possible to undertake

some definite research work though under the present limited staff arrangements it is impossible to give up proper time and attention to this type of work when so much routine work has to be proceeded with. It is to be hoped that in another year some assistance will be available even if only for the months of the cotton season, as next year the work will have to be carried on on even a greater scale.

A few germination tests were carried out in the office during the year and the results are appended below in Table 5 :—

TABLE 5.

| Variety. | | | Germination percentage. | Days to complete. |
|---|---|---|---|---|
| Nyasaland No. 17. ... | mean of 11 tests | ... ... | 88·3 | 8·45 |
| Salisbury ... | mean of 7 tests | ... ... | 90·7 | 8·00 |
| Sunflower ... | mean of 3 tests | ... ... | 85·0 | 4·00 |
| Allen ... | mean of 4 tests | ... ... | 55·6 | 8·2 |
| Nyasaland No. 24 ... | mean of 4 tests | ... ... | 83·6 | 8·2 |
| Webber ... | mean of 1 test | ... ... | 100·0 | 10·00 |
| Durango ... | mean of 1 test | ... ... | 93·8 | 10·00 |

In reference to Table 5 it will be noted that all the types tested are a satisfactory germination percentage under favourable conditions with the exception of Allen which is very low. The only other point worthy of note is the small number of days that Sunflower takes to complete its germination.

## Meteorological Records.

These records were taken on the Barograph, Thermograph, Hygrograph, and Black Bulb thermometer. The results of these will be given when the results of correlations are complete.

## Laboratory Equipment.

That ordered arrived early in 1925 but little use could be made of it owing to limited space available.

A small wooden hand gin from India was presented by the Empire Cotton Growing Corporation but it has proved rather unsatisfactory for small samples and most samples are at present ginned by hand, a long and tedious process.

## Touring.

Only two safaris were made : one in November, 1924, round Serere County for the purpose of selecting plants from native plots. The other was made in July round parts of Kioga and Kumam in Lango for the purpose of investigating the suitability of the Namasale Peninsular for a secondary segregated area.

## Native Staff.

In 1924 a Muganda clerk was engaged as a laboratory assistant and the various pupils at Serere were used for field work. In 1925 one pupil was definitely engaged as a field assistant and it is expected that three more will be engaged during 1926.

## General Conclusions.

From the first year's work it is definitely concluded that there is little need to improve the staple or the quality of cotton such as Nyasaland but the main scope for selection work will have to aim at regularity of staple, improvement in and regularity of strength, and most certainly at an improved yield per acre but at the same time the selection will always aim at an improved quality.

The main causes of the low yield are bud and boll shedding and these are due chiefly to the uncontrollable climatic conditions, but at the same time it is to be expected that strains resistant to shedding will be selected out.

There are many good strains of cotton in the main crops and with care in selection and observations a really improved type both in yield and quality should be obtained.

With the production of a pure type, or if the necessity for a change of variety arises, some slight modifications will have to be made with regard to the segregated area at Kadunguru and the means of seed distribution, as at present there is too large a chance of inter-crossing and mixing of the seed.

Finally it may be said that the programme for 1926-27 will be an elaboration of the one recorded here and it is hoped that it will be possible to extend the scope of plots away from the Experimental Station.

G. W. NYE,
*Cotton Botanist.*

# REPORT OF THE MYCOLOGIST

FOR THE PERIOD JANUARY 1ST TO SEPTEMBER 30TH.

1. Owing to my transfer to another colony, the present report covers nine months' work instead of the usual complete year. I have been on duty during the whole of the period under review. Less travelling than in previous years has been done, but I have visited a large number of estates in response to calls for assistance or advice and have also endeavoured to inspect the numerous native cotton plots around Kampala and Jinja. The teaching of the agricultural student from Makerere College has occupied a certain amount of time, and I have attended the meetings of the Plant Pests Board held during 1925. As in former years, I have been indebted to the Directors of the Imperial Bureau of Mycology and the Royal Botanic Gardens, Kew, for identifications and other help. Two papers, one dealing with the local occurrences of *Sclerotium bataticola* Taub. (formerly known as *Rhizoctonia lamellifera*) and the other with a *Colletotrichum* of the *gloeosporioides* type have been prepared for publication, and notes on cases of plant disease caused by *Sc. bataticola* and *Fusarium udum* Butl. have appeared in the Kew Bulletin (No. 3, 1925).

2. *Coffee.*—Reports of coffee disease have been few during 1925, and no new trouble of fungus origin has been recorded. *Sclerotium bataticola*, which was given in last year's report as the cause of fatal root disease of some sixteen woody plants, has occurred on *arabica* coffee in a few isolated instances, and also on *robusta* coffee roots that had been attacked by root mealy-bug and treated with paradichlorbenzene. Both kinds of coffee are apparently strongly resistant to the attacks of the *Sclerotium*, but certain evidence has been acquired which shows that (*robusta*) plants weakened by, for example, mealy-bug attack and chemical treatment may become susceptible to attacks of the fungus. Both the host-range and known distribution of *Sc. bataticola* in Uganda have been enlarged during the year, and the fungus must now be regarded as one which is not only widely distributed in our soils but is also capable of attacking and killing over twenty species of both woody and herbaceous plants. Further notes on the local occurrences of *Sc. bataticola* are given in paragraphs 5 and 6.

3. *Hevea.*—It is fortunate that the statement made in previous years to the effect that local Para diseases were of comparatively little account still holds good. Root diseases, pink disease and secondary leaf fall, all of which cause serious losses in other parts, are unknown in Uganda, and the presence of patch canker (*Phytophthora* sp.) and mouldy rot of the tapping surface (*Sphaeronema* sp.) is very doubtful. It was intended to carry out spraying experiments against *Oidium* leaf mildew, but 1925 has seen such a diminution in the attacks of the fungus that the experiments have been postponed. No exact results of the Keuchenius treatment of brown bast are yet available, but it can be said that the treated trees on the Government Plantation, Kampala, are doing well. Cases of premature coagulation of latex and of bubbles in prepared sheets have been investigated, and the causes of the troubles were pointed out and removed. Attempts were made to grow in culture the Para *Oidium* and a similar form from annatto leaves with a view to carrying out cross-inoculation experiments, but they did not meet with success.

4. *Tea.*—The only disease of tea reported during 1925 was a root trouble of nursery seedlings. It could best be described by the Ceylon name of "bitten-off" disease, and investigation showed that it was unlikely to be due to parasitic fungi. The resemblance between the tea seedling material and that of certain of the cotton seedlings discussed in the next paragraph was very striking, and it was possible that the primary cause of ill-health in both cases was insect or millipede attack.

5. *Cotton.*—Special attention has been given lately to the diseases of cotton seedlings. At times the rate of mortality among young cotton plants in native plots seems unduly high. Certain fungi *Sclerotium bataticola*, *Fusarium udum* Butl., *Fusarium* sp., a *Rhizopus* (probably *nigricans* Ehr.), an *Alternaria* and a *Colletotrichum* of the *gloeosporioides* type) have been found on roots and stems of sickly plants, but the circumstances of their occurrences are such as to throw doubt upon their being truly parasitic. In other words, they are not regarded as the dominant factors in causing disease. It is probable that they follow in the footsteps of insect and other pests (more particularly of a root grub which is being investigated by the Entomologist) and also take advantage of general conditions unfavourable to the seedlings. It is a fact that a large proportion of the seedlings attacked by, for example, *Sc. bataticola* or the *Colletotrichum* recovers from the immediate attacks of these fungi and proceeds to growth and flowering, and it follows that, as far as is known at present, the above fungi are not to be regarded as consistently aggressive parasites of young cotton. Uganda cotton may be more or less resistant to their attacks; but circumstances may arise at times in which the fungi gain, as it were, the upper hand. Such a case was reported in 1924 when *Colletotrichum* caused a distinct seedling anthracnose which was reproduced after several attempts through the inoculation of seed. *Sc. bataticola*, again, has not yet been found on an adult cotton plant. As regards leaf troubles of young cotton, areolate mildew (*Ramularia areola* Atk.) has been the only disease in evidence. It is directly

harmful only in prolonged wet periods, and even then it causes only defoliation. It leads, however, to the presence of *Colletotrichum* on the attacked leaves, and that fungus may lead, in its turn, to boll and seed disease. A careful search for Angular Leaf Spot due to *Bacterium malvacearum* EFS. was carried out in plots around Kampala and near Jinja. No true Angular Leaf Spot has been found, but a yellow bacterium which resembles *B. malvacearum* has been isolated from suspected spots on several occasions. It has failed, however, to cause leaf spotting in laboratory tests. At the same time, a Trinidad strain of *B. malvacearum* has been tested, and it also has given negative results. This would imply a resistance on the part of the tested plants to *B. malvacearum*, and it is possible that Uganda cotton is resistant either in whole or in part, but the experiments ought to be repeated again and again under varied conditions before such a conclusion is fully justified. The search for *B. malvacearum* has a bearing upon other cotton diseases like Black Arm (which was suspected of being present in the Eastern Province last year but was not proved to be so) and boll diseases, and it should therefore be continued. It may be added that the intention to investigate fully the significance of the occurrences of *Colletotrichum* on cotton bolls has not been fulfilled because the season is not yet advanced enough to provide the necessary material.

6. *Native Crops and Green Manures.*—Both *Puccinia graminis* Pers. and *P. triticina* Eriks. have been recorded on Toro wheat, and a species of *Helminthosporium* from the same host has been grown in culture for cross-inoculation studies. Downy mildews of maize and sorghum have been encountered, and the latter crop has also been affected by grain smut (*Sphacelotheca sorghi* (Link.) Clinton) and, for the first time by *Cerebella* (*sorghi-vulgaris* Subram. ?). The fungus which causes the head smut of maize (*Sorosporium reilianum* (Kuehn.) Mc Alp.) has been found on a wild *Sorghum* (*verticilliflorum* ?), but it has not yet been recorded on maize in Uganda. The common rust of beans (*Uromyces appendiculatus* (Pers.) Lk.) has been particularly severe in its attacks on a cowpea introduced from Rhodesia, and simsim (*Sesamum indicum* L.) has proved susceptible to attacks of *Sclerotium bataticola*. The latter are characterised in the field by the death of the plants in patches. Rice blast disease occurred in the Eastern Province, and the stem disease of buro (*Eleusine coracana* Gaertn.) which was investigated in 1921 without definite results yielded two fungi, *Sclerotium rolfsii* Sacc. and *Botryodiplodia theobromae* Pat. Though it is unlikely that the latter of these forms is a cause of the stem disease, both have been tested in soil inoculation experiments. Results, however, are not yet available. Certain imported green manures, a vetch from Palestine, a lupin bean, Damascus bean (*Vicia* sp.), horse gram (*Vicia* sp.) and a field pea (*Pisum arvense*), have been affected by a wilt with which were associated *Sc. bataticola* and *Fusarium udum*. These fungi were not present either singly or together on every diseased plant, and investigation of the wilts led to a conclusion which was proved to apply to the same fungi in the case of a wilt of French beans and which would have been tested in the cases of the green manures, namely, that the attacks of the fungi were aided by, if not entirely due to, circumstances unfavourable to the plants.

7. *General.*—The host range of *Heterodera radicicola*, Greef, has been extended to include species of *Triumfetta* (*binsambwe*), *Senecio*, *Conyza* and *Adenostemma* among indigenous plants and young maize among others. Fungi encountered for the first time during 1925 have included *Peronospora viciae* (Berk.) de B. on garden peas, *Cladosporium herbarum* Lk. on ramie fibre leaves and *Armillaria mellea* (Vahl.) Fr. on the soursop (*Anona muricata* L.). The cause of a collarrot of the candle-nut tree (*Aleurites triloba* Forst.) in Kampala has not been identified owing to the lack of fructifications.

A large number of inoculation and cross-inoculation experiments was carried out with isolations of the common Uganda *Colletotrichum*, and the results led to certain conclusions an account of which, as already mentioned, has been prepared for publication. So many recent records have been made of occurrences of *Sclerotium bataticola* and *Fusarium udum* that it was thought desirable to investigate the fungus flora of certain Uganda soils from the qualitative point of view. A beginning was made and it was hoped that the work would have developed in such a way as to provide useful information regarding the fungi to the attacks of which our plants, particularly introduced plants, are exposed under varying soil conditions. It was definitely determined during the first months of the year that the supposed new species *Rhizictonia lamellifera* mihi was indistinguishable from *Sclerotium bataticola* Taub., and the use of the former name has therefore been discontinued. Stress may be laid on the large number of woody hosts of *Sc. bataticola* in this country as opposed to the herbaceous hosts known in other parts. It is a remarkable fact that woody victims of the *Sclerotium* like *Grevillea robusta*, *Albizzia*, *Erythrina*, coffee, *eucalyptus* and so on have done well for as many as five or six years before succumbing to attacks of the fungus, and it seems as if the factor which decides the fate of the threatened plant is its immunity or susceptibility. It is possible, of course, that the resistance of the plant breaks down under the continued attack of the fungus or that the action of the fungus is very slow. Again, a certain amount of proof has been obtained for the statement that, in certain cases of both woody and herbaceous hosts, the operation of factors which lead to ill-health of the plants leads to successful *Sc. bataticola* attack, and there seems no doubt that recently imported plants are more open to attack than either long-acclimatised or indigenous forms. There is therefore a call for continued investigation into the biology of *Sc. bataticola* in Uganda.

**W. SMALL,**
*Mycologist.*

# ANNUAL REPORT

OF

# THE ASSISTANT ENTOMOLOGIST.

There have been no outbreaks of pests of great importance during the year. The only new insect of importance to record is *Platyedra gossypiella* Saund., the pink bollworm, this insect has, however, not been found to attack cotton. The pests are recorded below under the crops which they attack.

## 1. Coffee.

(*a*) *Antestia lineaticollis*, Stal. var.

The most important pest on this crop has been the variegated bug, *Antestia lineaticollis*, Stal. var. and its attack has been particularly severe in the Masaka District. At the suggestion of Mr. H. Wilkinson the poison bait spray used in Kenya has been tried by one of the Masaka planters. He reports that a stronger poison, namely, 1 oz. of sodium arsenite, 2 lbs. of jaggree and 4 gallons of water gives hopeful results. It is unfortunate that owing to the absence of any kind of chemical laboratory the sodium arsenite used cannot be analysed to determine the percentage of $As_2O_3$ in the consignment. Though it is too early to report definite results it is probably along the above lines that control will eventually be attained. The partiality of the bug for sweet liquids is further exemplified by the fact that is has been observed feeding on pieces of broken fig which had been scattered over some coffee trees.

This insect has this year been recorded for the first time from Toro but has caused little damage in this district. From eggs collected in this district at least five species of parasites have been reared including :—

(1) *Telenomus truncativentris*, Dodd.
(2) *Hadronotus antestiae*, Dodd.
(3) *Baryconus* sp. (one female).
(4) *Aprostocetus* sp. (one female).
(5) *Anastatus* sp. (males only).

At present it is not known whether these three last mentioned parasites recorded herein for the first time from the eggs of *Antestia lineaticollis*, Stal. var., are direct parasites of the egg of this insect or hyperparasites, attacking one or other of the two first mentioned species. The Entomologist records that although smoking facilitates collection of bugs on small trees, it is not efficient in the case of trees with dense growth.

The question of resistance to *Antestia* of various types of coffee has hardly as yet been studied, one type with stiff red leaves, is said by planters in the Masaka District to be very little attacked; it is possibly a red form of variety No. 3A. It does not produce a good crop and it is not known whether it breeds true but it might serve as a plant on which to build up a good cropping resistant strain. The interspecific hybrids on the Government Plantation are still too young to give any indication of their value.

(*b*) The Genus *Canthium* (*Rubiaceae*) as a Food Plant of Insects which attack Coffee.

An examination has been made of many of the wild plants belonging to the family Rubiaceae and many other plants have been examined in the neighbourhood of estates attacked by *Antestia*. On the islands of the Buvuma group in Lake Victoria where there is no record of *Coffea arabica* ever having been grown, *Antestia lineaticollis*, Stal. var. was found on *Canthium golongense*, *Canthium* sp. "matugunda," (this native name is applied to more than one species of *Canthium*) and *Tricalysia* sp. In proximity to estates it has been found on the following plants :—*Canthium* sp., ("matugunda") *Rattidia* 2 spp., ? *Pavetta* sp., *Coffea robusta*, *Clerodendron gheurkii* (*Verbenaceae*) and *Erlangea tomentosa* (*Compositae*). There is therefore some evidence for supposing that trees of the genus *Canthium*, and possibly also *Tricalysia*, are natural food-plants of this insect, but at present there is little evidence that the other plants mentioned

above are more than a possible temporary source of food or of moisture. Another interesting insect record from "matugunda" is *Antestia cincticollis*, Shaum.; moreover the Homopterous bug *Anigrus semihyalinus*, Lallem., (*Cixiidae*) recently described from specimens taken on coffee in Uganda, has been found on three species of *Canthium* (all included in "matugunda").

(*c*) *Anigrus semihyalinus*, Lallem. (Cixiidae).

The status of this insect as a pest is obscure, the adults suck the leaves of coffee but produce little obvious damage. The egg and nymphs have not been observed in the field but four batches of eggs, covered with a white down, have been deposited in captivity, three on coffee leaves and one on the side of the cage in which the insects were being kept. The attempt to rear the single batch of somewhat crab-like nymphs which emerged was unsuccessful.

(d) Mealy-bugs—*Pseudococcus citri*, Risso, *Pseudococcus ? coffeae* Newst. and *Pseudococcus virgatus* Ckll.

Damage by mealy-bug has been comparatively slight. A few small hymenopterous parasites of *P. citri*, Risso, have been observed, this insect has also been attacked by the larvae of the Coccinellid beetle *Hyperaspis hottentotta*, Muls. The method of feeding of this larva by injecting fluid into its prey has already been described (R. A. E., A. V., p. 402); natural control of this mealy-bug appears to be very slow. The Lycaenid *Spalgis limolea*, Druce, which has been recorded as an efficient control of this species in the Hoima District, has been found in Kampala feeding on *Pseudococcus virgatus*, Ckll. which attacks coffee and *Lucaena* (shade tree). A nearly full-grown larva has been observed to devour completely six full grown female mealy-bugs in twenty-four hours. With the assistance of Neuropterous larvae and parasites this caterpillar efficiently controls *P. virgatus*, Ckll.

An attack of mealy-bug has been in progress on the roots of coffee on the Government Plantation, Kampala. Specimens of this insect have been submitted to Mr. E. E. Green who has identified them as doubtfully *Pseudococcus coffeae*, Newstead. (This insect has previously been recorded under the name *P. citri*, Risso). Experiments have been continued with paradichlorbenzene against this insect. The first series of experiments conducted at Kampala on a plot of *Coffea arabica* and *Coffea robusta* three years old and planted between bananas shows that 1½ oz. of this substance applied to the bared roots of the trees is sufficient to kill the insect and to disintegrate the rubbery covering formed over the bug. Many trees, however, even with this moderate dose, were killed, and some of these which were examined by the Mycologist shewed signs of the fungus *Sclerotium bataticola* and a pink discolouration of the wood. The trees were unfortunately dug up before the Mycologist was able to examine the controls. It was decided therefore to treat a further plot of *Coffea robusta* 7½ years old with this chemical bought under the label "Vermikol." The roots were bared at the base only in this case, and treated with quantities varing from 1 to 2½ ozs. per tree. The plot was found to be quite free from *Sclerotium bataticola*. These plots will be examined at intervals and it is hoped also to experiment with the cheaper crude dichlorbenzene and the more toxic isomers of paradichlorbenzene.

(*e*) *Lycidocoris mimeticus*, R. &. P.

The Entomologist records an attack by this Capsid bug on unshaded and lightly shaded coffee trees on a small part of an estate in the Masaka area. Hitherto this pest has attacked only very deeply shaded coffee. The growth of the trees was so badly distorted that no crop could be produced and it was recommended that all the affected trees be stumped immediately. It was stated that the trees on the affected area had always produced less crop than those on other parts of the estate, and it would seem that the soil in that area was lacking in some essential plant nutrient.

This bug has been found on wild *Coffeae arabica* growing in deep forest shade.

(*f*) Other Insects on Coffee.

Other insects which have occurred as pests on coffee during the season under review include the caterpillars *Metadrepana* sp. and *Parasa* sp. of which the former has been found on wild *C. arabica*. Besides these may be included the small Chrysomelid *Jamesonia* sp., a very minor pest; *Stephanoderes hampei* Ferr., the berry borer; the Sphingid, *Cephonodes hylas*, Linn., the fruit-fly *Trirhithrum basale*, Bezzi, (*Trypetidae*) in coffee berries; *Brachytrypes membranaceus*, Drury "mayenje" crickets; and a species of *Asterolecanium* which appeared to be the cause of very serious damage to coffee on one estate. The Reduviid bug *Margasus afzelii* St., has been noted as preying on *Dirphyia princeps*, Jord., the yellow-headed coffee stem borer.

(*g*) Berry-fall.

A serious fall of green coffee cherries, the cause of which is not known, occurred in the Toro District in June; trees exhibiting the characters of the Boubon type of coffee suffered more than those exhibiting the character of the Nyasaland type. The condition of the plant cells at the point where the cherry became detached from the pedicel was very similar to the condition of the tissues at this point when berry-fall is produced by drought. The trees were not suffering from drought at the time but the rainfall had been badly distributed and the trees had received a check during the flowering period. The only insect associated with this berry-fall was a spring-tail (order *Collembola*) but it was not possible from field observations to decide if this insect had any part in causing the fall of the cherries.

(*k*) Native Coffee.

A certain number of complaints have been received from planters that native-grown coffee has been harbouring pests on the borders of their plantations. This matter is of great importance in the Masaka District where planters practise stumping their coffee when there is a serious attack of bug (*Antestia lineaticollis*, Stal. var.). Plots of native *Coffea arabica* bordering on or close to large plantations form a reservoir for the bug and special application has to be made in each case to the Plant Pests Board before the natives can be forced to take action. Native-grown *Coffea robusta* will also serve as food for the bug but it is not known for how long it can feed on this coffee or whether it breeds on it. It would be well to discourage the growing of *Coffea arabica* by natives in the districts where there are large areas of this coffee cultivated by Europeans or others and to prevent native plots of either species of coffee being planted in the immediate vicinity of these plantations.

## 2. Cotton.

(*a*) Insects Attacking the Roots.

Our knowledge of cotton pests has not been appreciably advanced during the past year. A considerable amount of damage to cotton roots has been observed. It is not always an easy matter to determine the prime cause of the death of the plants but millipedes, the larvae of a Eumolpid beetle and of one or more species of beetles of the family *Scarabeidae* have been found at the roots.

Damage by millipedes has been largely confined to the seedlings; it seems that plants growing in soil which retains little moisture suffer more than those in soil with a better water-retaining capacity

A more serious pest however has been the Eumolpid beetle (family *Chrysomelidae*, sens. lat.) *Syagrus calcaratus*, F., but so far it has only been recorded from the Bulemezi and Serere districts. The danger of this insect is that the plant does not show signs of attack until about six or eight inches high, perhaps not until it has come into flower, when it may be seen to wilt and to die. In this case, therefore, re-planting is very much delayed. One, two or three larvae, may be found at the roots of each plant and the tissues of the plant at the edges of the scars where the insects have been feeding show a nodular appearance, where callous tissue has been formed. The larvae pupate in earthen chambers near the roots of the plant on which they have been feeding. The adults feed on the leaves of the cotton plant. The few observations which it has been possible to make indicate that this pest is more prevalent on land which has been planted with cotton for two successive seasons. The only possible methods of control which suggest themselves are either cultural methods or crop rotation. It is hoped that experiments on these lines, already too long delayed, will be put down next cotton season.

As a newly observed minor pest on the roots of cotton, the Aphid *Geoica* sp. is to be recorded.

(*b*) Cotton Stainers.

A variety of Malvaceous plants were last year planted in rows between cotton to determine whether they would prove attractive to cotton stainers, either those belonging to the genus *Dysdercus* or those belonging to the genus *Oxycarenus*. None of the plants proved to be an attraction to *Dysdercus* but two plants, namely *Hibiscus cannabinus* (Lubera) and *Sida rhombifolia* ("Luvunvu lusaja"), proved attractive to *Oxycarenus* spp. It is however very doubtful whether the species of *Oxycarenus* found on cotton are the same as those found on the other Malvaceous plants. The following forms of *Oxycarenus* may with tolerable certainty be recorded from Uganda.

(1) *Oxycarenus rufiventris*, Germ.

On *Hibiscus cannabinus*, *Hibiscus diversifolius* (and on? a red variety of this species) rare on cotton.

(2) *Oxycarenus* sp., probably undescribed, rare, on cotton and *H. cannabinus*.

(3) *Oxycarenus fieberi*, Stal. Form (i) smaller form with black thorax on *Sida rhombifolia* and *S. cordifolia*. Form (ii) larger form, with reddish or brownish thorax on *Hibiscus calyphyllus*. *Hibiscus* sp. (No. 12), *Abutilon* 2 spp. *Dombeya* (*Sterculiaceae*) a few on *H. cannabinus* (when inter-planted between rows of cotton). This is the most abundant form on cotton in Buganda. The occurrence of form (i) on cotton is doubtful, the size and colour differences may be correlated with differences of nutrition.

(4) *Oxycarenus hyalinipennis*, Costa. One specimen has this year been sent in from the West Nile District where it was reported as very abundant on cotton. Further observations will be necessary before it is possible to decide which of these forms should rank as species.

Small plots of *Hibiscus* spp. and cotton have been planted this year; species of *Hibiscus* being chosen to include as far as possible all those on which *Dysdercus* spp. have been observed to feed readily in the field.

The following forms of *Dysdercus* have been noted during the past year:—

*Dysdercus nigrofasciatus*, Stal., the most abundant species on cotton also noted on 3 spp. of wild *Hibiscus* not yet identified, from *H. ? diversifolius* (red var.) and *Pavonia* sp. The fruits of *Bixa* ("anatto") seem to be attractive to the adults of this species.

*Dysdercus fasciatus*, Sign. on cotton and kapok.

*Dysdercus pretiosus*, Dist. on *Sida* sp.

(c) Boll Worms.

The pink boll-worm, *Platyedra gossypiella*, Saund. has been found for the first time in Uganda, feeding in the seed heads of *Hibiscus diversfolius* on Sentwa (Isentwa) Island in Lake Victoria. It has not yet been recorded from cotton. Larvae, brightly marked with pink, have been found in *Hibiscus ? diversifolius* (red var.) by the Kagera River. The single adult which has so far been reared from these larvae has not yet been examined by an expert, but is possibly the same species as the insect from Isentwa Island. The larvae from the Kagera River agree closely with the descriptions of larvae of *P. gossypiella* but the horseshoe arrangement of crochets on the prolegs is broken in the centre, a character described as differentiating the form of larvae found in Queensland on *Hibiscus* alone from the form which attacks cotton in that region. Further material from Isentwa is not at present available, it is hoped that an examination of the mainland in that district may be made in the near future and further larvae obtained from the island.

Another boll-worm belonging to the same superfamily *Tineina* has been bred from *Hibiscus* sp. (No. 12). The spiny boll-worn, *Earias* sp. has occurred sparingly and the American boll-worn *Heliothis obsoleta*, F., has also been recorded both on cotton and on garden peas. The most abundant boll-worn has been the reddish species which still remains unidentified. A spiny boll-worm, ? *Earias* sp. has been found in the two following species of wild *Hibiscus*, *H. diversifolius* and *H. sabdariffa*, larvae on the latter being parasitised by a small Braconid.

(*d*) Miscellaneous.

Aphids and Jassids have occurred on cotton to a considerable extent. The Syrphid larva (probably *Parargus borbonicus*, Mcq.) which preys on the former has suffered from attacks of the parasite *Bassus laetatorius*, F. *(Ichneumonidae, Tryphoninae)*. Other insects from cotton include from decaying cotton bolls, *Brachypeplus depressus*, Er. and *Carpophilus dimidiatus*, F. probably, scavengers. In some areas Termites—probably *Termes bellicosus*—have attacked and destroyed the stems of apparently healthy cotton plants.

## 3. Miscellaneous Pests.

The following pests of native crops or ornamental plants have been recorded, those ever-present species which have not been specially noted this year are not recorded:—

On sugar—*Pseudococcus sacchari*, Ckll.

On maize—*Megalognatha rufiventris*, Baly. "Luwanjo."

On sorghum—Stem-borer, unidentified, *Noctuidae*.

A Tortricid and a Tineid larva in the seeds.

On mulberry—Stem borer, *Inesida leprosa*, F. "Sikisiki."

In stored beans and peas—*Bruchus ornatus*, Boh. and. *Bruchus obtectus*, Say.

On *Picrolema kleineana*—*Deilephila nerei*, L., leaf eating caterpillar.

On *Crotalaria striata*, green manure crop—*Longitarsus* sp. (*Halticidae*) leaf-eating beetle and a Capsid bug, undetermined.

In "nkoba" wood—a Cerambycid larva, one adult *Atractocerus brevicornis*, L. (*Lymexylonidae*) with larvae of ? this species.

On *Grevillea robusta*—*Monophlebus ficus*, Laing. (*Coccidae*).

In bananas—*Cosmopolites sordidus* and a Noctuid larva, undetermined, feeding in the apical leaf before it uncurls.

## 4. General.

Routine work and work on the collections together with teaching the Makerere student has also been carried out.

GEORGE L. R. HANCOCK,

*Assistant Entomologist.*

# ANNUAL REPORT

OF

# THE SENIOR AGRICULTURAL OFFICER.

## Meteorological.

1. There were no abnormal features as regards the weather of the past year further than a partial failure of the Spring rains, which was made up by heavier and more prolonged Autumn rains, and the total for the year was about an average of past years.

## General District Notes.

### Lango District.

2. The cotton crop of 1924 proved a successful one, with a total yield of approx. 10,000 tons seed cotton, and an estimated average yield of 435 pounds seed cotton per acre.

Prices at the markets were well maintained all through the season for the best cotton, but fell towards the close when inferior samples were offering. The quality of the cotton was good from the point of view of staple, but broker's reports indicated a falling off in appearance as compared with Teso cotton, and slightly lower values were obtained in consequence.

3. During the year under review meagre rains in the Spring months delayed cultivation of all kinds, and at one time threatened a failure of the main food crop. The latter was an unusually late crop, which caused delay in the cultivation for cotton, and little or no sowing was done before 1st July. Fortunately July and August proved good sowing months, and ultimately an area slightly in excess of the previous year's was planted.

4. The main food crop, although late, proved an ample one and was secured in excellent condition. Other crops such as simsim, groundnuts, sweet potatoes, etc., have also done well, and as there is little export of either of these crops from Lango now, the position as regards food supplies at the end of the year may be said to be satisfactory.

5. The opening of a plantation at Lira has been instrumental in creating an interest in improved methods of agriculture amongst the chiefs and natives. It is also doing good work in the training of selected youths from the different gombololas. The latter, after, a course at Lira, are sent to Serere to complete their training, after which they are appointed assistant instructors on probation.

6. At Kabiramaido some demonstration plots have been arranged in conjunction with the ploughing school by the Ploughing Instructor. The local chiefs and natives are keenly interested in these plots, and the latter are proving an excellent object lesson in improved methods.

### Teso District.

7. The cotton season of 1924—25 came to an end in March. The total yield was approximately 14,000 tons seed cotton equal to 360 pounds seed cotton per acre, which was a considerable increase over the previous year's crop both in total yield and in yield per acre.

8. The quality of the cotton was also better than that of the previous year especially in the beginning of the season, some of the first consignments of bales being reported on by the brokers as "the finest cotton ever shipped from Teso." Towards the end of the season, however, colour and appearance of samples fell off considerably, following on some rainstorms in February, and "points on" dropped from 500 to 350.

Prices averaged 20 to 22 cents per pound to growers throughout the season.

9. Ginning commenced early and by the end of June the bulk of the crop had been ginned and baled, and much of it shipped causing congestion at the ports.

Prices for seed ruled high, but export was held up owing to congestion on the railway, and so ginners did not reap the full benefit from the high prices.

10. As regards the crops of the past year, weather conditions were similar to those in Lango, and consequently in this district also cotton sowing was late in beginning. Areas, however, are said to show an increase over the previous year, but owing to the dry spells during the sowing season and other causes, the crop in many areas is a thin plant.

11. Bud shedding was profuse on the early sown cotton during heavy rains in November and in consequence the early picking, which gave excellent promise in October, was much less than expected. Rains in December also affected the picking and the quantity of cotton ready for sale on 1st January.

12. The partial failure of the Spring rains caused some anxiety in regard to food crops, and rumours of impending famine were current. Much of the earlier "bulo" crop failed and had to be resown, and anxiety was not relieved until late in May. The late "bulo" crop reaped in July proved a fairly successful one, good Autumn rains ensured a large potato crop, the bean crop was also very successful, and thus the food position at the close of the year may be said to be normal.

13. Reduced areas of groundnuts and simsim crops are again recorded. It would appear that both crops are being used almost entirely to supplement the shortage of other food, and that seed supplies are generally short when the sowing season comes round. These crops are useful both economically and potentially especially the groundnut crop, which fits in so well in a rotation with the cotton crop and increases the fertility of the soil, and the disappearance of this crop from native agriculture would be a disaster to Teso District.

14. With regard to general cultivation, the Teso natives have always held a high place amongst Nilotic and Bantu tribes for the quality of their cultivation, and for their readiness to assimilate and adopt new and better methods. In recent years it has been noticed that in an endeavour to increase the areas under cotton, there has been a falling off in the quality of the cultivation and corresponding decreases in crop yields. It is hoped that the above tendency will be corrected by increased training and instruction, and by the extension of the plough for initial cultivation.

15. It is pleasing to be able to report a largely increased number of ploughs in the hands of natives during the year, the total being 1,680 against a total of 716 in the previous year. The Ploughing Instructor reports that the areas per plough would also be larger due to the absence of diseases among cattle in the main ploughing areas, and to better weather conditions. An encouraging feature is the ploughing of large areas during the Autumn in preparation for the sowing of early food crops.

*Cotton Seed No. N 17.*

16. The new type N 17 was successfully introduced into native cultivation, the restricted area of Kadunguru and Labore being sown entirely with seed of that type. The resultant crop appears to be successful in every way and heavy yields are expected from it.

---

## SERERE AND SIMSA EXPERIMENTAL STATIONS.

### SERERE.

*Cotton Crop.—*

*Results of Crop of Year 1924.*

A. Main Crop—Type No. N 17—Area 22 acres.

| | | |
|---|---|---|
| Total crop | 14,950 pounds | A. quality seed cotton |
| | 1,850 „ | B. „ „ „ |
| Total ... ... ... | 16,800 | |
| Yield per acre ... ... ... ... | 763 pounds. | |
| Percentage of lint ... ... ... ... | 30. 5 | |

B. Third Year Selections.

| No. | Variety | Area | Total yield | Yield per acre | Ginning percentage | Remarks. |
|---|---|---|---|---|---|---|
| | | Acres | pounds | pounds | | |
| 8 | Allen ... ... ... | 4 | 1,128 | 282 | 30·28 | Crop thinned out by root disease. |
| 5 | Sunflower ... ... ... | 4 | 1,725 | 431 | 28·5 | |
| 12 | Nyasaland ... ... | 4 | 1,680 | 420 | 28·5 | |

*Note :*—None of the above was retained for further experiment, although No. 5 was very well reported on by the brokers to whom a sample of the lint was sent.

C. Second Year Selections.

| No. | Variety | Area | Total Yield | Yield per acre | Remarks. |
|---|---|---|---|---|---|
| | | acre | pounds | pounds | |
| 2 | Allen ... ... ... | 0·289 | 147 | 424·8 | |
| 8 | do ... ... ... | 0·289 | 135 | 390 | |
| 12 | do ... ... ... | 0·289 | 93 | 268·7 | |
| 15 | do ... ... ... | 0·289 | 149 | 430 | |
| 17 | do ... ... ... | 0·289 | 175 | 505·7 | |
| 11 | Nyasaland ... ... | 0·289 | 174 | 501·3 | |
| 19 | do ... ... ... | 0·289 | 172 | 497 | |
| 24 | do ... ... ... | 0·289 | 250 | 722·5 | |

*Note* :—Only Nos. 19 and 24 were retained for further experiment, and full particulars of these will be found in Table 3 of the Cotton Botanist's report.

D. First Year Selections.

The 71 progeny rows from individual plant selections made the previous year were examined by the Cotton Botanist. Out of the total seven rows only were retained for further experiment, particulars of which will be found in Table 2 of the Cotton Botanist's report.

Referring to Table 4 on page 18 of the above report it is interesting to note that Teso, Lango, Masaka and the Northern Province, which are all growing the same type of cotton, *viz.*, No. 32, give the highest percentage of seed purity.

*Other Crops.*—The improvement of food and other crops by seed selection and propagation was begun during the past year, and this work is to receive special attention from the Plantation Manager in the future.

## Simsa.

This station was carried on, as usual, as an adjunct to the Serere station, with a native headman in charge.

*Meteorological.*—The weather conditions were extremely unfavourable, with an abnormal drought in April and violent rainstorms in August and November.

*Labour.*—Labour was as usual a difficult question, and, after the experience of previous years, it was decided to restrict the area under cultivation.

*Crop Areas.*—Areas of crops were as under :—

| | | | |
|---|---|---|---|
| Cotton ... ... | 12 acres | Cassava ... | 4 acres |
| Bulo (wimbi) ... | 10 „ | Beans ... | 1 „ |
| Mtama (Millet) ... | 5 „ | Tobacco ... | 1 „ |
| Groundnuts ... | 5 „ | Maize ... | 1 „ |
| Sweet potatoes ... | 2 „ | | |
| | | Total | 37 acres. |

As stated above the weather conditions were unfavourable for this station, and all crops suffered in consequence.

The bulo crop sown in February failed entirely and had to be resown. The second sowing was only partially successful.

The groundnut crop was a fairly successful one with a yield of about 550 pounds per acre. It is intended next year to confine the work on this station chiefly to the production of improved groundnut seed for sale to natives for sowing purposes.

The cotton crop, of which 12 acres were planted, was the No. 17 type. The seed was good, and germination satisfactory and a good stand of plants obtained. The early sown crop developed woodiness, and there was much bud shedding, but the later sowing was more successful. The total crop, however, will be a small one.

The live stock kept healthy and free from disease, two deaths occurred, one from old age and debility and the other from wounds in the cattle kraal. It has been found necessary to cut the tips from the horns to prevent further damage.

R. G. HARPER,

*Senior Agricultural Officer.*

# NOTES ON COFFEE BY THE COFFEE OFFICER.

The coffee industry is at present undergoing some very encouraging and interesting changes in cultural methods, and it may be stated that these changes are being brought about by the inability of the coffee to respond to the orthodox methods of coffee culture.

In cultural methods of growing coffee, climate, pruning and shade are the outstanding features which are determining the outlook for *Arabica* coffee in Uganda. It is now generally accepted that the climatic conditions found much below 4,500 feet are not suited to the growth of *Arabica* coffee, and this is one of the underlying causes of a number of coffee estates having to be abandoned. This is clearly illustrated in the Buganda Province, in Busoga and in Bunyoro, where each year the acreage of coffee is decreasing. (Para rubber in which coffee was planted is responsible for reducing some of the acreage by shading out the coffee). The time is not far off when the acreage of *Arabica* coffee at elevations lower than 4,500 feet will be negligible.

Everywhere the multiple stem system of pruning and training coffee is being adopted in preference to the single stem system, with excellent results in all parts. The saving of labour in pruning has been enormous, the size of the bean has been improved and usually heavier yields are obtained.

Like pruning, shade is also giving the industry a better outlook and planters are now convinced that shade is of the greatest importance. So far the most satisfactory shade is the local bark-cloth (*Ficus natalensis*); another that is proving very promising is the mojote (*Croton Narcrostashys*) a common species in Toro. Other types are also being used.

The improved methods of preparing and handling coffee are other noticeable features.

*Robusta* coffee is receiving very serious consideration especially where *Arabica* does not do well on estates below 4,500 feet. I have every reason to believe that in future this type of coffee will be exclusively grown in preference to other species, though probably in the highlands of Uganda, *Arabica* will take the lead. The altitude at which *Arabica* thrives is greater than that of *Robusta*, but the latter in Uganda will be found to thrive up to 5,000 feet. The light soils and arid districts are not suited to its growth, and on the light soils of Busoga and parts of Toro and Mubende Districts one notices the stunted growth of *Robusta*. In the Province of Buganda, especially the lake areas, as well as in Bunyoro, excellent *Robusta* may be seen.

The Department has been doing very useful work in the selection of improved types of *Robusta;* we have now some very promising types that excel *Arabica* both in size and weight.

*Robusta* grows best under shade and I have observed that it can do with more shade than *Arabica*. I do not recommend any system of pruning, at least, not until I have had more experience with this species of coffee, because the natural habit of growth of the tree is to eliminate yearly all the old fruiting wood which is replaced by new wood. This elimination of the old fruit wood takes place soon after the coffee has ripened and fallen and it is not quite so pronounced in other species of coffee; therefore it is obvious that pruning of *Robusta* is of little importance.

*Robusta* in its natural state of growth develops into a large multiple stem tree of a beautifu symetrical shape. I advise spacing of *Robusta* to be at least twelve feet triangular.

The crop for the year has been a large one in all parts, and in Toro, I understand is a record crop of a better bean than has been for some previous years. Where trees have developed on a multiple stem, they are noted to be in a healthier condition with plenty of green foliage, whereas the single stem trees usually were found with a great deal of die-back and little or no green foliage. Also shade trees were in excellent condition not approached by unshaded.

L. P. ROSS.

*Coffee Officer.*

**Appendix No. 1.**

AGRICULTURAL DEVELOPMENTS CO., LTD.,
HARPENDEN,
HERTS.

S. SIMPSON, ESQ.,
*Director of Agriculture.*

5TH SEPTEMBER, 1925'

DEAR SIR,

*Your letter No. 264/152.*

Under separate cover I am sending you two samples of manures made from "Lusenke" and "Elephant" grass respectively. Analyses of these are given on the sheet attached. Phosphate and Potash have not been determined but the wet nanures will contain about 0·5% $P_2O_5$ and anything from 0·2 to 1·0% of $K_2O$.

I have no doubt that *Lusenke* will make an excellent manure treated with 1½ cwt. of No. 3 ADCO per ton of dry matter in the raw material.

*Elephant grass* is not so good. It will certainly require some mechanical crushing or cutting before stacking. It cannot utilise more than 1 cwt. of No. 3 ADCO per ton and consequently does not make so rich a manure as *Lusenke*.

You may be interested to hear that we have supplied ADCO through the Crown Agents to the Agricultural Departments of Gambia, Gold Coast, Malay States and Rhodesia. The last has published the result of trial in July issue of "Rhodesia Agricultural Journal." They are considered "eminently satisfactory."

Yours etc.,

E. H. RICHARDS,
*Managing Director.*

| | *Lusenke.* | *Elephant.* | *Average Farmyard.* |
|---|---|---|---|
| Dry matter in original sample ... | 91·71 ... | 90·14 ... | — |
| Total nitrogen in original sample... | 0·61 ... | 0·88 ... | — |
| ADCO MANURE MADE FROM ABOVE 160 DAYS. | | | |
| Dry matter in wet manure ... | 22·70 ... | 17·98 ... | 23·89 |
| N. as ammonia in wet manure ... | 0·03 ... | 0·002 ... | — |
| Total nitrogen in wet manure ... | 0·68 ... | 0·43 ... | 0·55 |
| Total nitrogen in dry matter ... | 3·00 ... | 2·40 ... | 2·78 |
| Loss of dry matter by fermentation | 54·2 ... | 48·0 ... | — |
| Phosphate ... ... | 0·5* ... | 0·5* ... | 0·23 |
| Potash ... ... ... | 0·2 to 1*... | 0·2 to 1*... | 0·56 |

For comparison purposes an analysis of an averge sample of English farmyard is added.

*Undetermined. Approximate figures.

## Grasses.

### GROUP I.

### Tall Erect Grasses.

| | | | | | |
|---|---|---|---|---|---|
| 2 | *Pennisetum purpureum* ... | "Ebisagazi" ... | Perennial | All good selling grasses. | Of very vigorous growth, flowering stalk up to 14 feet, a cane, and useless at this stage as a feed. Responded well to 1st cutting, and has produced a lush growth, 6 feet high. |
| 5 | *Hyparrhenia rufa* ... | "Njegula" ... | do ... | | A strong grower, flowering stalk up to 10 feet, cane-like, still in good condition as feed although flowering, has responded well to 1st cutting and has produced a fine lush growth 2½. |
| 13 | *Hyparrhenia cimbaria* ... | "Tusimbenkokola" | do ... | | A strong grower, flowering stalk to 10 feet, soon cane-like and useless for feed, has responded to 1st cutting with 4 feet of lush growth, a similar grass to *H. rufus* but much stronger in the cane-like stalk. has responded well to 1st cutting, and has produced a good lush growth. |
| 34 | *Undetermined* ... | "Kituntugulu" | do ... | | A strong grower, and similar in many respects to *H. rufus* and *H. cimbaria*. There was not sufficient in the plot for cutting test. |
| 24 | *Sorghum verticiliflorum* ... | "Oluwembawemba" | *Annual... | | These are both similar grasses but 24 has not the bulk in growth in respect to leaves and stalks as 25. They dry up almost completely after flowering and then vegetate from the nodes. In this state they are not satisfactory as a feed; 25 has responded well to 1st cutting and has produced lush growth, and is the better of the two species. |
| 25 | *do do var.* ... | do | | | |
| 28 | *Panicum maximum* ... | "Mukonzikonzi" | Perennial | | A strong grower, flowering stalk up to 10 feet not cane-like. Although flowering still in a green condition for feed, has responded to 1st cutting but not quite comparable in this respect with *H. rufus* and *H. cimbaria*, to which category it may fairly be referred. |

*Annual for feed purposes.

### GROUP II.

### Short Erect Grasses.

| | | | | |
|---|---|---|---|---|
| 14 | *Pennisetum polystachyon* ... | "Kakira embwa" | Perennial ... | A good grower, erect-bunch grass, goes to seed readily and produces an abundance of purple fluffy spikes, but has a good vegetative condition prior to this, has responded well to 1st cutting and yielded a good lush growth. |
| 19 | *Andropogon canaliculatus* ... | "Mbuka" ... | do ... | This has not proved a satisfactory crop as it lacks body. |
| 4 | *Trechopterix kagerensis* ... | "Kalenziwe" ... | do ... | A clump grass with flowering stalks knee on to waist deep, a close grower in good soil. This grass forms the major grazing on the slopes of the Lake shore and the Sese Islands and is relished by stock. There was not sufficient for cutting tests. |
| 39 | ‡*Trechopteryx sp.* ... | ? ... | do ... | A far more vigorous grass than 4, with flowering stalks to 4 feet, almost cane-like clump somewhat spreading, may probably prove comparable with *Panicum maximum*. |
| 1 | *Rottboellia exaltata* ... | "Nabunyo" ... | Annual ... | An annual grass providing a good lush growth in its vegetative stage, dies down rapidly, a good soiling grass. |
| 8 | *Hyparrhenia filipendula* ... | "Mpunta" ... | Perennial ... | A grass with not much body as regards leaf, consisting largely of flowering stalks, forms pasture on gravelly slopes Lake region, is not likely to prove suitable for planting up for pasture. |
| 30 | *Setaria sulcata* ... | "Kisagalabusa" | do ... | A stiff vigorous broad leaved clump grass to 2½ feet or more, mostly occurring as an undergrowth or on edge of forests but doing well in the open plot here, has the appearance of yielding well and of a good feed. |
| 31 | *Cymbopogon afronardus* ... | "Tete" ... | do ... | Erect clump grass, aromatic leaves, flowering stalk up to 8 feet, vegetative parts to 3 feet. This grass is frequent on slopes, on gravelly soils and dry parts. Was not ready for cutting tests. |
| 32 | *Setaria aurea* ... | "Embwa" ... | do ... | A similar grass to 33 but weaker and more lax in habit. |
| 33 | *Setaria verticilatan* ... | do ... | do ... | A stiff clump grass with flowering stalks to 4 feet, vegetative parts to 2½ feet, a close grower and forming a good feed. |

‡Two varieties appear in this plot although the grass was got from the same source. (A) Vegetative parts erect, leaves glabrous or sometimes with hairs sparingly distributed along margins. (B) A more lax habit, leaves markedly hirsute.

**Appendix No. 2**—*continued.*

**Grasses**—*continued.*

## GROUP III.

### Short, Sparingly and wide Spreading Grasses.

| | | | | |
|---|---|---|---|---|
| 7 | *Tricholaena rosea* ... | "Kifuta musaja" | Perennial ... | A spreading grass, rooting from culms, quick grower, to 2½ feet high, with good bulk, dries up partially on flowering, revegetates, and also replenished readily from seed, has responded well to 1st cutting, and produced good seed. |
| 9 | **Panicum trichocladium* ... | Lumondi ... | do ... | A wide spreading lax grass and vigorous, flowering freely, but keeps in good condition, has quite good bulk and has responded well to 1st cut. The natives feed this grass to their goats, sheep and cattle. |
| | *Paspalum notatum* ... | An introduced grass | do ... | A very short grass, forming a carpet, spreading slowly by rooting culms, a suitable feed for sheep and goats, or for forming a rough lawn, as it requires little or no moving. |
| 16 | *Paspalum sp.* ... ... | — | do ... | A short 1 foot--1½ feet, spreading slowly by rooting culms, close grower, but not very lush and with always a good deal of dead leaf. Stands cutting well. This grass generally makes its appearance after a time in most lawns which have been laid down in *Cynodon dactylon.* |
| 17 | *Paspalum sp.* ... ... | — | do ... | A strong lush grass, the most luscious of the grasses under test, excepting a young growth of elephant grass, up to 2½ feet. Spreading by rooting culms, stems and leaf. Sheaths flat, spongy. A grass occasionally found on edge of forest or under shade, but thriving well in the open plot here. |
| 11 | *Digitaria sp. nov* ... | — | do ... | Similar to *P. notatum* in habit, but more vigorous and lush, spreading rapidly by rooting culms to 6 ins.—1 foot high, occurs on edge of Lake, and is thriving in open plot here. |
| 2 | **Brachiaria brizantha* ... | "Kifuta mukazi" | do ... | This is one of the best short spreading grasses up to 2 feet, dense growth, spreading by rooting culms, keeps in good condition although in flower, has responded well to 1st cut and produced good lush growth. |
| 3 | *Cynodon plectostachyon* ... | "Kalundalugo" | do ... | A vigorous grass, wide spreading by rooting culms, up to 3 feet is left ungrazed, keeps in good condition although flowering, has responded well to 1st cut and produced a good close heavy growth of green seed, is likely to stand grazing well. |

* See Annual Report Dept. of Agric., 1924, page 29 for analyses of these grasses.

---

**Appendix No. 3.**

## Broker's Report on six Samples of Cotton grown in the Teso District, dated 4th August, 1925.

| *Mark.* | *Value.* | *Classification.* |
|---|---|---|
| No. 1 EJOK, Serere Experiment Station, Nyasaland Upland. | 17·00d. | Creamy colour, clean, staple 1·⅛ in. @ 1·3/16 in. fairly strong. |
| No. 2 EJAKAIT, Serere Experiment Station, Nyasaland Upland. | 16·50d. | Rather white, clean, staple full 1·⅛ in. |
| No. 3 YOGA, Serere Experiment Station, Allen's. | 18·00d. | Creamy in colour, clean, staple 1¼ in. silky and strong. |
| No. 4 ATURO, Serere Experiment Station, Nyasaland. | 17·00d. | Creamy in colour, rather leafy, staple 1·3/16 in. irregular. |
| No. 5 SOLOT, Soroti, Nyasaland Upland. | 16·50d. | Creamy in colour, fairly clean, staple full 1·⅛ in. rather soft. |
| No. 6 KAMOD, Serere, Nyasaland Upland. | 16·75d. | Creamy in colour, staple 1·3/16 in. much mixed with short and wasty. |

Based on August American Futures 13·00d.

# Native Agriculture—Estimate of Approximate Acreages of Crops under Cultivation.

| Province and District. | Potatoes. | | Millets. | | Rubbers. | | Cotton. | Coffee. | | Plantains | Maize. | Dhal. | Beans. | Sugar Cane. | Sim-Sim. | Ground-nuts. | Cassava. | Tobacco. | Wheat. | Rice. | Chillies. | Cacao. | Peas. | Miscellaneous Crops. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sweet | English. | Mtama. | Wimbi. | Para. | Other. | | Robusta. | Arabica. | | | | | | | | | | | | | | | |
| | ACRES. | | | | | | | | | | | | | | | | | | | | | | | |
| BUGANDA :— | | | | | | | | | | | | | | | | | | | | | | | | |
| Mengo .. | 135,000 | 175 | 460 | 821 | 750 | 376 | 110,000 | 40 | 197 | 400,000 | 4,136 | .. | 10,000 | 4,344 | 5,820 | 4,340 | 5,600 | 500 | .. | 231 | 1,123 | 100 | 230 | 250 |
| Entebbe .. | 19,337 | 314 | 1,357 | 86 | 1,059 | .. | 30,000 | 129 | 104 | 151,000 | 7,271 | .. | 6,488 | 10,856 | 1,624 | 6,077 | 12,475 | 451 | .. | 9 | 649 | 73 | 133 | 1 |
| Masaka .. | 2,100 | .. | .. | 100 | .. | .. | 30,000 | 169 | 200 | 60,000 | 400 | .. | 400 | .. | 100 | 750 | 200 | .. | .. | 1 | 200 | .. | 200 | 2,000 |
| Mubende .. | 3,000 | 50 | 2,000 | 11,000 | .. | 100 | 30,000 | 10 | 110 | 50,000 | 5,000 | 100 | 5,000 | 100 | 2,500 | 2,000 | 2,000 | 1,000 | 100 | .. | 100 | .. | 50 | .. |
| TOTAL .. | 159,437 | 539 | 3,757 | 12,007 | 1,809 | 476 | 200,000 | 348 | 611 | 661,000 | 16,807 | 100 | 21,888 | 15,300 | 10,044 | 13,167 | 20,275 | 1,951 | 100 | 241 | 2,072 | 173 | 613 | 2,251 |
| EASTERN :— | | | | | | | | | | | | | | | | | | | | | | | | |
| Busoga .. | 10,000 | .. | 4,000 | 7,000 | .. | .. | 87,333 | .. | 10 | 50,000 | 1,000 | .. | 500 | 100 | 500 | 400 | 3,000 | .. | .. | 50 | 1,000 | .. | . | .. |
| Budama .. | 24,172 | .. | 6,400 | 30,000 | .. | .. | 40,487 | .. | .. | 20,000 | 318 | .. | .. | .. | 40 | .. | 20,000 | .. | .. | 37,460 | .. | .. | .. | .. |
| Bugwere .. | 2,620 | .. | 500 | 25,000 | .. | .. | 53,743 | .. | .. | 1,500 | 1,650 | 20 | 1,510 | 10 | 1,500 | 670 | 3,200 | .. | .. | 400 | 50 | .. | .. | .. |
| Bugishu .. | 2,950 | 100 | 660 | 27,225 | 2 | .. | 43,050 | .. | 475 | 36,075 | 560 | 10 | 735 | 50 | 100 | 200 | 4,650 | .. | 80 | 880 | 10 | .. | 12 | 625 |
| Teso .. | 20,000 | .. | 26,000 | 103,000 | .. | .. | 97,500 | .. | .. | 1,200 | 800 | .. | 18,500 | .. | 4,500 | 12,000 | 8,000 | .. | .. | .. | .. | .. | .. | .. |
| Lango .. | 21,600 | .. | 43,000 | 103,000 | .. | .. | 61,500 | .. | .. | 500 | 900 | .. | 9,700 | .. | 20,500 | 8,500 | 4,000 | .. | .. | 160 | .. | .. | 35,000 | .. |
| Karamoja .. | 5 | .. | 3,460 | 500 | .. | .. | .. | .. | .. | .. | 30 | .. | .. | .. | 10 | 5 | .. | .. | .. | .. | .. | .. | .. | .. |
| Lobor .. | | | | | | | | | | NO | BASIS | FOR AN | ESTIMATE. | | | | | | | | | | | |
| TOTAL .. | 81,347 | 100 | 84,020 | 295,725 | 2 | .. | 383,613 | .. | 485 | 109,275 | 5,258 | 30 | 30,945 | 160 | 27,150 | 21,775 | 42,850 | .. | 80 | 38,950 | 1,060 | .. | 35,012 | 625 |
| NORTHERN :— | | | | | | | | | | | | | | | | | | | | | | | | |
| Bunyoro .. | 12,000 | 30 | 500 | 7,000 | .. | .. | 12,000 | .. | 210 | 5,300 | 500 | .. | 7,500 | 2 | 5,000 | 2,000 | 550 | 150 | .. | 3 | 2 | .. | 500 | 102 |
| Gulu .. | 1,500 | .. | 2,000 | 8,000 | .. | .. | 7,988 | .. | .. | 100 | 100 | .. | 1,500 | 2 | 6,000 | 500 | 200 | .. | .. | 5 | .. | .. | .. | 2 |
| Chua .. | 3,000 | .. | 13,000 | 15,000 | .. | .. | 5,841 | .. | .. | .. | .. | .. | 2,000 | .. | 5,000 | 1,500 | 100 | .. | .. | .. | .. | .. | .. | .. |
| West Nile .. | 65,000 | 20 | 30,000 | 35,000 | .. | .. | 1,000 | .. | 4 | 50 | 600 | .. | 4,500 | 2 | 30,000 | 800 | 100 | 40 | .. | 300 | .. | .. | 10,000 | .. |
| TOTAL .. | 81,500 | 50 | 45,500 | 65,000 | .. | .. | 26,829 | .. | 214 | 5,450 | 1,200 | .. | 15,500 | 6 | 46,000 | 4,800 | 950 | 190 | .. | 308 | 2 | .. | 10,500 | 104 |
| WESTERN :— | | | | | | | | | | | | | | | | | | | | | | | | |
| Toro .. | 20,000 | 20 | 1,000 | 40,000 | .. | .. | 3,877 | .. | 45 | 50,000 | 1,500 | 50 | 20,000 | 400 | 1,000 | 1,000 | 220 | 15 | 151 | 308 | 66 | .. | 1,000 | .. |
| Ankole .. | 28,000 | 50 | 6,000 | 35,000 | .. | .. | 3,000 | .. | 100 | 38,000 | 6,000 | .. | 11,000 | 10 | 10 | 300 | 6,000 | 250 | .. | .. | 300 | .. | 15,000 | 2,000 |
| Kigezi .. | 12,000 | 120 | 42,000 | 40,000 | .. | .. | 5 | .. | 8 | 12,000 | 5,000 | .. | 40,000 | 5 | 200 | 150 | 70 | 300 | .. | .. | 30 | .. | .. | .. |
| TOTAL .. | 60,000 | 190 | 49,000 | 115,000 | .. | .. | 6,882 | .. | 153 | 100,000 | 12,500 | 50 | 71,000 | 415 | 1,210 | 1,450 | 6,290 | 565 | 151 | 308 | 396 | .. | 16,000 | 2,000 |
| RUDOLF :— | | | | | | | | | | | | | | | | | | | | | | | | |
| Turkana<br>Dabossa | | | | | | | | | | NO | BASIS | FOR AN | ESTIMATE. | | | | | | | | | | | |
| GRAND TOTAL .. | 382,284 | 879 | 182,277 | 487,732 | 1,811 | 476 | 617,324 | 348 | 1,463 | 875,725 | 35,765 | 180 | 139,333 | 15,881 | 84,404 | 41,192 | 70,365 | 2,706 | 331 | 39,807 | 3,530 | 173 | 62,125 | 4,980 |

The acreage under coffee which has previously been estimated on the number of plots is now computed on the basis of 700 trees to one acre.

Appendix No. 5.

## Native Agriculture—Live Stock.

| Province and District. | | Cattle. | Sheep. | Goats. | Horses. | Mules. | Donkeys. |
|---|---|---|---|---|---|---|---|
| BUGANDA:— | Mengo ... | 40,974 | 17,440 | 132,870 | — | — | 9 |
| | Entebbe ... | 26,212 | 8,389 | 63,497 | — | — | 2 |
| | Masaka ... | 39,714 | 3,931 | 34,239 | — | — | 3 |
| | Mubende ... | 17,000 | 5,120 | 55,000 | — | 1 | — |
| | TOTAL | 123,900 | 34,880 | 285,606 | — | 1 | 14 |
| EASTERN:— | Busoga ... | 60,082 | 14,852 | 119,611 | — | 1 | 2 |
| | Budama ... | 60,000 | ? | ? | — | — | — |
| | Bugwere ... | 58,692 | 7,612 | 57,660 | — | — | — |
| | Bugishu ... | 114,808 | 33,493 | 105,161 | — | — | — |
| | Teso ... | 242,000 | 28,000 | 56,000 | — | — | — |
| | Lango ... | 168,000 | 45,000 | 75,000 | — | — | — |
| | Karamoja ... | 85,000 | 241,000 | 60,000 | 1 | 4 | 11,000 |
| | Lobor ... | No basis for an estimate. | | | | | |
| | TOTAL ... | 788,582 | 369,957 | 473,432 | 1 | 5 | 11,002 |
| NORTHERN:— | Bunyoro ... | 5,522 | 5,100 | 22,000 | — | — | — |
| | Gulu ... | 50,000 | 15,000 | 30,000 | — | — | — |
| | Chua ... | 30,000 | ? | ? | — | — | 10 |
| | West Nile ... | 80,000 | 20,000 | 50,000 | — | 8 | 11 |
| | TOTAL ... | 165,522 | 40,100 | 102,000 | — | 8 | 21 |
| WESTERN:— | Toro ... | 57,000 | 29,000 | 54,600 | — | — | — |
| | Ankole ... | 140,000 | 70,000 | 125,000 | — | 1 | 10 |
| | Kigezi ... | 65,000 | 60,000 | 140,000 | — | — | — |
| | TOTAL ... | 262,000 | 159,000 | 319,600 | — | 1 | 10 |
| RUDOLF:— | ... ... | No basis for an estimate | | | | | |
| GRAND TOTAL | ... | 1,340,004 | 603,937 | 1,180,638 | 1 | 15 | 11,047 |

## European Agriculture.

COMPILED FROM RETURNS FROM 160 PLANTATIONS.

| Province and District. | No. of Estates. | Total Acreage taken up. | Total Acreage under cultivation. | Total Acreage not cultivated. | Acreage of Coffee (*Arabica*). | | Acreage of Coffee (*Robusta*). | | Acreage of Para Rubber. | | Acreage of Other Rubbers. | | Acreage of Cacao. | | Acreage of Tea. | | Cotton. | Maize. | Sugar. | Miscellaneous Crops. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Under 2 years. | Over 2 years. | Under 2 years. | Over 2 years. | Under 5 years. | Over 5 years. | Under 5 years. | Over 5 years. | Under 5 years. | Over 5 years. | Under 5 years. | Over 5 years. | | | | |
| BUGANDA :— | | | | | | | | | | | | | | | | | | | | |
| Mengo .. ... ... | 62 | 33,060 | 11,414 | 21,646 | 62 | 4,631 | 199 | 369 | 433 | 7,941 | — | 384 | — | 628 | — | — | 218 | 8 | 114 | 206 |
| Entebbe ... ... | 15 | 5,890 | 2,339 | 3,551 | 30 | 1,185 | 10 | 45 | 80 | 1,449 | — | — | — | — | — | — | 11 | 9 | — | — |
| Masaka ... ... | 16 | 6,013 | 1,370 | 4,643 | 60 | 1,122 | — | 6 | — | 415 | — | — | — | 32 | — | — | 65 | — | — | — |
| Mubende ... ... | 11 | 7,304 | 2,241 | 5,063 | 4 | 1,617 | 18 | 100 | 330 | 115 | — | — | — | 5 | 82 | 75 | — | — | — | — |
| TOTAL ... | 104 | 52,267 | 17,364 | 34,903 | 156 | 8,555 | 227 | 520 | 843 | 9,920 | — | 384 | — | 665 | 82 | 75 | 294 | 17 | 114 | 206 |
| EASTERN :— | | | | | | | | | | | | | | | | | | | | |
| Busoga ... ... ... | 9 | 10,196 | 1,391 | 8,805 | — | 962 | 8 | 84 | — | 195 | — | — | — | 10 | — | — | 54 | — | 170 | 63 |
| NORTHERN :— | | | | | | | | | | | | | | | | | | | | |
| Bunyoro ... ... ... | 22 | 13,200 | 3,573 | 9,627 | 170 | 2,988 | 10 | 59 | — | 905 | — | — | — | 15 | — | — | 5 | 86 | — | 240 |
| WESTERN :— | | | | | | | | | | | | | | | | | | | | |
| Toro ... ... ... | 25 | 12,096 | 2,086 | 10,010 | 216 | 1,847 | — | — | — | + | — | — | — | 10 | — | — | — | — | — | 45 |
| GRAND TOTAL ... | 160 | 87,759 | 24,414 | 63,345 | 542 | 14,352 | 245 | 663 | 843 (1) | 11,020 (2) | — | 384 | — | 700 (3) | 82 | 75 | 353 (4) | 103 | 284 | 554 (5) |

(1) 230 acres interplanted with coffee.
(2) 4,790 „ „ „ „
(3) 553 „ „ „ „ and rubber.

(4) 148 acres interplanted with coffee.
(5) 65 „ „ „ „ and rubber.

Compiled from Returns from 31 Plantations.

| Province and District. | Number of Estates. | Total Acreage taken up. | Total Acreage under cultivation. | Total Acreage not cultivated. | Acreage of Coffee (*Arabica*). | | Acreage of Coffee (*Robusta*). | | Acreage of Para Rubber. | | Acreage of Cacao. | | Cotton. | Maize. | Sugar. | Miscellaneous Crops. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Under 2 years. | Over 2 years. | Under 2 years. | Over 2 years. | Under 5 years. | Over 5 years. | Under 5 years. | Over 5 years. | | | | |
| BUGANDA :— | | | | | | | | | | | | | | | | |
| Mengo ... ... | 13 | 7,906 | 3,709 | 4,197 | — | 945 | — | 205 | 125 | 775 | — | 300 | — | — | 2,364 | — |
| Entebbe ... ... | 4 | 1,110 | 451 | 659 | 6 | 274 | — | 28 | — | 75 | — | — | 9 | — | 59 | — |
| Masaka ... ... | 3 | 1,792 | 417 | 1,375 | — | 190 | 84 | 10 | — | 170 | — | 20 | 65 | — | 73 | 40 |
| Mubende ... ... | 2 | 839 | 330 | 509 | — | 330 | — | — | — | — | — | — | — | — | — | — |
| TOTAL ... | 22 | 11,647 | 4,907 | 6,740 | 6 | 1,739 | 84 | 243 | 125 | 1,020 | — | 320 | 74 | — | 2,496 | 40 |
| EASTERN :— | | | | | | | | | | | | | | | | |
| Busoga ... ... | 7 | 6,293 | 1,423 | 4,870 | — | 765 | 16 | 229 | — | 600 | 5 | — | 68 | 5 | 130 | 40 |
| WESTERN :— | | | | | | | | | | | | | | | | |
| Toro ... ... | 2 | 583 | — | 583 | — | — | — | — | — | — | — | — | — | — | — | — |
| GRAND TOTAL ... | 31 | 18,523 | 6,330 | 12,193 | 6 | 2,504 | 100 | 472 | 125 | 1,620* | 5 | 320† | 142‡ | 5 | 2,626 | 80 |

*1,310 acres interplanted with coffee.
†300 „ „ „ rubber.
‡65 „ „ „ coffee.

**Appendix No. 8.**

## Live Stock on European Plantations.

| Province and District. | Cattle. | Mules. | Donkeys. | Sheep. | Goats | Pigs. |
|---|---|---|---|---|---|---|
| BUGANDA : | | | | | | |
| Mengo ... ... ... | 268 | 4 | 5 | 15 | 20 | 20 |
| Entebbe ... ... ... | 138 | ... | ... | ... | .. | ... |
| Masaka ... ... ... | 148 | ... | ... | ... | ... | 21 |
| Mubende ... ... ... | 580 | ... | ... | ... | ... | ... |
| TOTAL ... | 1,134 | 4 | 5 | 15 | 20 | 41 |
| EASTERN : | | | | | | |
| Busoga ... ... ... | 84 | ... | 4 | 50 | 85 | ... |
| NORTHERN : | | | | | | |
| Bunyoro ... ... ... | 65 | 2 | 1 | 3 | ... | ... |
| WESTERN : | | | | | | |
| Toro ... ... ... | 267 | 1 | 7 | 30 | 96 | 68 |
| GRAD TOTAL ... | 1,550 | 7 | 17 | 98 | 201 | 109 |

## Live Stock on Indian Plantations.

| Province and District. | Cattle. | Mules. | Donkeys. | Sheep. | Goats. | Pigs. |
|---|---|---|---|---|---|---|
| BUGANDA : | | | | | | |
| Mengo ... ... ... | 13 | ... | 8 | ... | ... | ... |
| Entebbe ... ... ... | 11 | ... | ... | ... | ... | ... |
| Masaka ... ... ... | 19 | ... | 3 | ... | ... | ... |
| TOTAL ... | 43 | ... | 11 | ... | ... | ... |

**Appendix No. 9.**

## Comparative Statement of Uganda Produce Exported from Mombasa for the year ended 31st December, 1925.

| Articles. | Unit. | From 1st January to 31st December, 1925. | | From 1st January to 31st December, 1924. | | Increase. | | Decrease. | |
|---|---|---|---|---|---|---|---|---|---|
| | | Quantity | £ | Quantity | £ | Quantity | £ | Quantity | £ |
| Cotton, Raw ... ... ... | centals | 784,152 | 4,685,992 | 514,418 | 3,486,565 | 269,734 | 1,199,427 | ... | ... |
| „ Seed ... ... ... | tons | 21,928 | 122,790 | 21,093 | 106,280 | 835 | 16,510 | ... | ... |
| Coffee, Raw ... ... ... | cwts. | 29,883 | 139,469 | 41,093 | 167,696 | ... | ... | 11,210 | 28,227 |
| Rubber, Raw ... ... | centals | 8,058 | 68,704 | 6,083 | 18,911 | 1,975 | 49,793 | ... | ... |
| Chillies ... ... ... | cwts. | 2,257 | 2,935 | 21,357 | 35,499 | ... | ... | 19,100 | 32,564 |
| Jaggery (Unrefined Sugar) ... | „ | 338 | 245 | 48 | 33 | 290 | 21 2 | ... | ... |
| Sugar, Refined ... ... | „ | 4,053 | 7,447 | 319 | 698 | 3.734 | 6,749 | ... | ... |
| Groundnuts ... ... ... | tons | 41 | 820 | 89 | 1,446 | ... | ... | 48 | 626 |
| Cocoa, Raw ... ... ... | cwts. | 115 | 311 | 118 | 499 | ... | ... | 3 | 188 |
| Simsim ... ... ... | tons | 214 | 4,523 | 740 | 15.602 | ... | ... | 526 | 11,079 |
| Skins, Sheep and Goats ... ... | No. | 55,350 | 4,014 | 274,915 | 14,175 | ... | ... | 219,565 | 10,161 |
| Hides, Dry and Dry Salted ... | cwts. | 7,027 | 29,843 | 7,172 | 24,347 | ... | 5,496 | 145 | ... |
| Hippo Teeth .. ... ... | „ | 1 | 9 | 30 | 732 | ... | ... | 29 | 723 |
| Horns ... ... ... | „ | 1 | 86 | 3 | 224 | ... | ... | 2 | 138 |
| Ivory ... ... ... | „ | 307 | 28.535 | 269 | 22,909 | 38 | 5,626 | ... | ... |
| Timber ... .. ... | cub. ft. | 359 | 75 | 2,151 | 323 | ... | ... | 1,792 | 248 |
| Miscellaneous Produce ... ... | — | ... | 521 | ... | 830 | ... | ... | ... | 309 |
| Goods, Manufactured, unenumerated | — | ... | 53 | ... | 274 | ... | ... | ... | 221 |
| Goods, Unmanufactured, „ ... | — | ... | 345 | ... | 352 | ... | ... | ... | 7 |
| Totals ... | | ... | 5,096,717 | ... | 3,897,395 | ... | 1,283,813 | ... | 84,491 |

Net Increase :—£1,199,322.

**Appendix No. 10.**

## Comparative Statement of Exports from the Uganda Protectorate.

| Articles. | Unit. | Year ended 31st Dec., 1921. | | Year ended 31st Dec., 1922. | | Year ended 31st Dec., 1923. | | Year ended 31st Dec., 1924. | | Year ended 31st December, 1925. | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Quantity | £ | Quantity | £ | Quantity | £ | Quantity | £ | Quantity | £ |
| Cotton, Raw ... ... | centals | 325,463 | 1,281,357 | 193,159 | 877,625 | 352,184 | 2,026,820 | 514,418 | 3,486,565 | 784,152 | 4,685,992 |
| Cotton Seed ... ... | tons | 4,865 | 22,113 | 2,124 | 9,532 | 9,794 | 52,964 | 21,093 | 106,280 | 21,928 | 122,790 |
| Coffee, Raw ... ... | cwts. | 48,856 | 94,038 | 51,262 | 99,227 | 40,931 | 108,490 | 41,093 | 167,896 | 29,883 | 139.469 |
| Rubber, Raw ... ... | centals | 740 | 4,441 | 1,249 | 3,741 | 3,986 | 9,926 | 6,083 | 18,911 | 8,058 | 68,704 |
| Chillies ... ... | cwts. | 7,355 | 30,213 | 11,935 | 52,768 | 18,223 | 58,660 | 21,357 | 35,499 | 2,257 | 2,935 |
| Ghee (Clarified Butter) ... | „ | 481 | 2,075 | 909 | 4,329 | 128 | 365 | 3 | 9 | ... | ... |
| Jaggery (Unrefined Sugar)... | „ | 2,593 | 4,341 | 2,398 | 3,742 | 1,127 | 921 | 48 | 33 | 338 | 245 |
| Sugar, Refined ... | „ | ... | ... | ... | ... | ... | ... | 319 | 698 | 4,053 | 7,447 |
| Groundnuts ... ... | tons | 2 | 35 | 507 | 9,236 | 175 | 2,714 | 89 | 1,446 | 41 | 820 |
| Cocoa, Raw ... ... | cwts. | 329 | 1,475 | 565 | 2,370 | 399 | 1,079 | 118 | 499 | 115 | 311 |
| Sim-sim ... ... | tons. | 1,003 | 18,907 | 2,796 | 47,100 | 1,435 | 24,383 | 740 | 15,602 | 214 | 4,523 |
| Sim-sim Oil ... ... | gals. | 12* | 47 | 57* | 162 | 16 | 4 | ... | ... | ... | .. |
| Castor Seed ... ... | tons | 13 | 302 | 28 | 574 | 10 | 114 | ... | ... | ... | ... |
| Provisions, Fresh ... | ... | ... | ... | ... | ... | ... | 287 | ... | 15 | ... | 13 |
| Skins, Sheep and Goats ... | No. | 3,000* | 20,041 | 2,832* | 18,680 | 314,914 | 14,839 | 274,915 | 14,175 | 55,350 | 4,014 |
| Skins, Miscellaneous ... | „ | ... | 34 | ... | 43 | 16 | 32 | 55 | 26 | ... | ... |
| Hides, Dry and Dry Salted | cwts. | 1,985 | 6,211 | 5,397 | 11,197 | 10,423 | 28,855 | 7,172 | 24,347 | 7,027 | 29,843 |
| Hippo Teeth ... ... | „ | 19 | 211 | 138 | 1,534 | 101 | 1,271 | 30 | 732 | 1 | 9 |
| Horns ... ... | „ | 59 | 4,524 | 9 | 626 | 15 | 1,033 | 3 | 224 | 1 | 86 |
| Ivory ... ... | „ | 832 | 46,599 | 1,222 | 68,419 | 807 | 58,673 | 269 | 22,909 | 307 | 28,535 |
| Timber ... ... | C. ft. | 306* | 343 | ... | 35 | 50,194 | 541 | 2,151 | 323 | 359 | 75 |
| Miscellaneous Produce ... | ... | ... | 1,691 | ... | 4,470 | ... | 1,423 | ... | 780 | ... | 508 |
| Goods, Manufactured, unenumerated | ... | ... | 483 | ... | 313 | ... | 161 | ... | 274 | ... | 53 |
| Goods, Unmanufactured, unenumerated ... | ... | ... | 57 | ... | 70 | ... | 123 | ... | 352 | ... | 345 |
| Totals ... | ... | ... | 1,539,538 | ... | 1,215,793 | ... | 2,393,678 | ... | 3,897,395 | ... | 5,096,717 |

* Cwts.

Note :—Export figures as from 1st January, 1924, represent actual shipments from Mombasa, whereas all figures prior to that date represent exports from Uganda ports

## Details of Machinery in use at Licensed Ginneries in the Uganda Protectorate—Season, 1925.

| Province and District | Ginneries | Gins | | Seed Openers | Presses | | Engines | | | Delinters |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Roller | Saw | | Hand | Power | Steam | Oil | Suction Gas | |
| EASTERN :— | | | | | | | | | | |
| Busoga ... ... ... | 29 | 293 | 18 | 25 | 22 | 8 | 26 | 2 | 2 | — |
| Budama ... ... ... | 7 | 36 | 20 | 3 | 8 | 3 | 3 | 3 | 1 | — |
| Bugwere... ... ... | 12 | 84 | 22 | 9 | 13 | 6 | 7 | 3 | 2 | — |
| Bugishu ... ... ... | 3 | 39 | 2 | 3 | 3 | 1 | 2 | — | 1 | — |
| Teso ... ... ... | 24 | 179 | 26 | 18 | 18 | 13 | 10 | 2 | 12 | — |
| Lango ... ... | 15 | 100 | 24 | 11 | 13 | 6 | 12 | 1 | 2 | — |
| TOTAL ... | 90 | 731 | 112 | 69 | 77 | 37 | 60 | 11 | 20 | — |
| BUGANDA :— | | | | | | | | | | |
| Mengo ... ... ... | 29 | 288 | 2 | 29 | 17 | 11 | 19 | 2 | 9 | 3 |
| Entebbe ... ... ... | 7 | 61 | 1 | 7 | 5 | 2 | 7 | — | — | — |
| Masaka ... ... ... | 10 | 108 | 1 | 10 | 5 | 5 | 10 | — | — | — |
| Mubende ... ... | 9 | 64 | 3 | 8 | 9 | — | 8 | 1 | — | — |
| TOTAL ... | 55 | 521 | 7 | 54 | 36 | 18 | 44 | 3 | 9 | 3 |
| NORTHERN :— | | | | | | | | | | |
| Bunyoro ... ... | 3 | 30 | — | 3 | 1 | 2 | 3 | — | — | — |
| Gulu ... ... ... | 3 | 30 | — | 3 | 1 | 1 | 3 | — | — | — |
| Chua ... ... ... | 1 | 8 | — | 1 | 1 | — | 1 | — | — | — |
| West Nile ... ... | 1 | — | 2 | — | — | 1 | 1 | — | — | — |
| TOTAL ... | 8 | 68 | 2 | 7 | 3 | 4 | 8 | — | — | — |
| WESTERN :— | | | | | | | | | | |
| Toro ... ... ... | 1 | 6 | — | 1 | 1 | — | 1 | — | — | — |
| Ankole ... ... ... | 1 | 4 | 1 | 1 | 1 | — | 1 | — | — | — |
| TOTAL ... | 2 | 10 | 1 | 2 | 2 | — | 2 | — | — | — |
| GRAND TOTAL ... | 155 | 1,330 | 122 | 132 | 118 | 59 | 114 | 14 | 29 | 3 |

## Entebbe Meteorological Statement for the Year 1925.

| Month. | 7 A.M. | | | | 2 P.M. | | | | 9 P.M. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Barometer corrected and reduced to 32° F. | Attached Thermometer | Dry Bulb. | Wet Bulb. | Barometer corrected and reduced to 32° F. | Attached Thermometer | Dry Bulb. | Wet Bulb. | Barometer corrected and reduced to 32° F. | Attached Thermometer | Dry Bulb. | Wet Bulb. | Maximum Temperature. | Minimum Temperature. | Sunshine. | Rainfall. | No. of days Rain fell. |
| | Ins. | ° | ° | ° | Ins. | ° | ° | ° | Ins. | ° | ° | ° | ° | ° | Hrs. | Ins. | |
| January ... ... ... | 26·211 | 68·3 | 66·0 | 63·5 | 26·121 | 79·0 | 76·2 | 67·6 | 26·132 | 69·5 | 68·6 | 65·1 | 78·5 | 61·8 | 5·33 | 5·11 | 16 |
| February ... ... ... | ·199 | 70·7 | 69·0 | 65·7 | ·121 | 80·7 | 75·6 | 67·7 | ·115 | 70·8 | 69·9 | 65·4 | 79·7 | 63·2 | 6·54 | 3·33 | 8 |
| March ... ... ... | ·178 | 70·2 | 68·8 | 65·7 | ·114 | 78·9 | 76·4 | 68·7 | ·115 | 70·0 | 68·9 | 66·2 | 78·3 | 63·4 | 5·45 | 8·99 | 17 |
| April ... ... ... | ·200 | 73·2 | 71·2 | 67·9 | ·131 | 80·5 | 77·5 | 69·4 | ·136 | 71·1 | 69·9 | 66·9 | 79·7 | 63·6 | 6·81 | 9·17 | 16 |
| May ... ... ... | ·220 | 71·2 | 68·8 | 66·9 | ·158 | 79·1 | 76·1 | 69·2 | ·175 | 69·7 | 68·8 | 66·2 | 77·9 | 63·9 | 5·62 | 3·57 | 14 |
| June ... ... ... | ·235 | 69·8 | 68·1 | 65·1 | ·176 | 76·6 | 74·3 | 67·2 | ·193 | 68·0 | 66·7 | 64·9 | 76·2 | 62·0 | 2·92 | 2·21 | 10 |
| July ... ... ... | ·243 | 69·7 | 67·3 | 64·1 | ·206 | 77·4 | 74·9 | 66·4 | ·217 | 68·3 | 67·5 | 64·0 | 77·4 | 60·9 | 4·69 | 0·93 | 8 |
| August ... ... ... | ·252 | 69·7 | 67·7 | 64·4 | ·142 | 77·5 | 75·0 | 67·2 | ·216 | 68·0 | 67·1 | 64·7 | 78·1 | 61·1 | 5·78 | 3·83 | 6 |
| September ... ... ... | ·197 | 75·5 | 69·0 | 65·2 | ·102 | 81·4 | 78·1 | 70·2 | ·122 | 69·4 | 68·1 | 65·5 | 80·1 | 61·7 | 7·40 | 1·01 | 7 |
| October ... ... ... | ·222 | 72·1 | 69·1 | 65·2 | ·133 | 82·5 | 79·1 | 69·3 | ·121 | 70·7 | 69·9 | 66·2 | 80·7 | 62·8 | 7·47 | 5·48 | 18 |
| November ... ... ... | ·233 | 70·4 | 67·8 | 65·1 | ·135 | 78·2 | 75·7 | 68·5 | ·191 | 68·6 | 67·4 | 65·3 | 78·1 | 62·2 | 5·11 | 4·88 | 16 |
| December ... ... ... | ·220 | 70·5 | 68·6 | 65·9 | ·149 | 79·1 | 76·5 | 69·3 | ·184 | 68·7 | 67·9 | 65·6 | 78·9 | 63·0 | 5·46 | 5·17 | 18 |
| Mean for the Year | ·217 | 70·9 | 68·4 | 65·4 | ·141 | 79·2 | 76·3 | 68·4 | ·160 | 69·4 | 68·4 | 65·5 | 78·6 | 62·5 | 5·72 | Totals 53·68 | 154 |

## Statement of Extra Meteorological Observations taken at Entebbe during the year 1925.

| MONTH. | Radiation. | | | Earth Thermometers. | | Average Hourly Velocity of Wind between the hours of | | | Evaporation. |
|---|---|---|---|---|---|---|---|---|---|
| | Solar Black Bulb. 2 P.M. | Solar Bright Bulb. 2 P.M. | Terrestrial Minimum 7 A.M. | 1½ feet. 7 A.M. | 4 feet. 7 A.M. | 9 P.M. TO 7 A.M. | 7 A.M. TO 2 P.M. | 2 P.M. TO 9 P.M. | |
| | o | o | o | o | o | miles per hour | miles per hour | miles per hour | mms. |
| JANUARY ... ... ... ... | 132·9 | 96·4 | 58·6 | 73·5 | 74·2 | 2·6 | 4·5 | 3·3 | 3·09 |
| FEBRUARY ... ... ... ... | 136·9 | 99·8 | 58·9 | 75·5 | 75·0 | 2·0 | 5·2 | 4·3 | 3·45 |
| MARCH ... ... ... ... ... | 136·7 | 98·4 | 59·8 | 75·3 | 75·1 | 2·1 | 4·7 | 5·0 | 2·86 |
| APRIL ... ... ... ... ... | 139·7 | 100·8 | 59·2 | 75·9 | 75·3 | 1·1 | 4·6 | 4·6 | 2·91 |
| MAY ... ... ... ... ... | 136·9 | 99·6 | 58·6 | 74·6 | 76·2 | 1·5 | 4·7 | 4·0 | 2·45 |
| JUNE ... ... ... ... ... | 134·6 | 96·8 | 56·7 | 73·5 | 74·8 | 1·8 | 5·4 | 3·7 | 2·64 |
| JULY ... ... ... ... ... | 134·5 | 98·6 | 55·6 | 74·1 | 77·7 | 1·5 | 5·1 | 4·9 | 3·12 |
| AUGUST ... ... ... ... ... | 137·4 | 99·3 | 55·6 | 72·8 | Thermometer broken. | 2·2 | 4·8 | 4·5 | 2·78 |
| SEPTEMBER... ... ... ... ... | 140·6 | 102·0 | 56·6 | 75·4 | | 2·5 | 5·7 | 4·3 | 3·59 |
| OCTOBER ... ... ... ... ... | 137·1 | 100·3 | 57·3 | 76·5 | | 2·8 | 5·9 | 5·2 | 3·77 |
| NOVEMBER ... ... ... ... ... | 135·9 | 98·1 | 58·0 | 74·9 | | 1·4 | 4·6 | 4·5 | 2·72 |
| DECEMBER ... ... ... ... ... | 133·9 | 100·8 | 56·2 | 73·6 | | 2·0 | 3·6 | 2·4 | 1·90 |
| YEARLY MEAN | 136·4 | 99·2 | 57·6 | 74·6 | 75·5 | 2·0 | 4·9 | 4·2 | 2·94 |

## JINJA Meteorological Statement for the Year 1925.

| Month. | 7 A.M. | | | | 2 P.M. | | | | 9 P.M. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Barometer corrected and reduced to 32°F. | Attached Thermometer. | Dry Bulb. | Wet Bulb. | Barometer corrected and reduced to 32°F. | Attached Thermometer. | Dry Bulb. | Wet Bulb. | Barometer corrected and reduced to 32°F. | Attached Thermometer. | Dry Bulb. | Wet Bulb. | Maximum Temperature. | Minimum Temperature. | Rainfall. | No. of days Rain fell. | Evaporation. |
| | Ins. | o | o | o | Ins. | o | o | o | Ins. | o | o | o | o | o | Ins. | | mms. |
| January ... ... | 26·136 | 72·6 | 66·7 | 64·2 | 26·057 | 83·5 | 78·9 | 65·4 | 26·099 | 71·8 | 68·2 | 64·5 | 82·8 | 60·8 | 3·55 | 10 | 4·03 |
| February ... ... | ·129 | 75·9 | 69·5 | 66·0 | ·049 | 84·5 | 79·1 | 67·4 | ·101 | 72·8 | 69·4 | 65·5 | 83·6 | 62·1 | 2·51 | 8 | 4·78 |
| March ... ... | ·125 | 73·7 | 67·7 | 65·2 | ·054 | 83·0 | 75·6 | 66·9 | ·118 | 71·7 | 68·8 | 65·5 | 81·9 | 62·9 | 7·56 | 16 | 2·69 |
| April ... ... | ·116 | 75·0 | 68·3 | 65·4 | ·069 | 83·3 | 77·6 | 68·9 | ·096 | 74·0 | 70·3 | 65·6 | 84·0 | 58·1 | 7·81 | 13 | 4·21 |
| May ... ... | ·126 | 71·9 | 67·0 | 64·6 | ·107 | 82·5 | 74·8 | 65·3 | ·108 | 70·9 | 67·2 | 64·0 | 84·1 | 53·5 | 2·60 | 11 | 2·95 |
| June ... ... | ·136 | 70·5 | 65·6 | 63·7 | ·080 | 81·4 | 74·9 | 68·6 | ·120 | 70·8 | 68·1 | 65·1 | 83·9 | 50·2 | 3·56 | 15 | 2·80 |
| July ... ... | ·144 | 65·7 | 64·8 | 61·8 | ·086 | 81·0 | 76·9 | 67·4 | ·132 | 68·9 | 66·5 | 63·3 | 83·2 | 51·0 | 3·42 | 8 | 3·35 |
| August ... ... | ·145 | 69·5 | 65·5 | 62·7 | ·085 | 80·5 | 74·1 | 68·4 | ·134 | 70·4 | 67·6 | 64·9 | 83·0 | 51·5 | 3·11 | 10 | 2·95 |
| September ... ... | ·139 | 74·3 | 66·2 | 63·3 | ·081 | 83·2 | 74·6 | 68·1 | ·129 | 70·0 | 67·5 | 65·1 | 84·0 | 52·0 | 4·61 | 11 | 3·49 |
| October ... ... | ·142 | 71·0 | 67·0 | 64·1 | ·079 | 83·0 | 74·5 | 68·6 | ·128 | 70·1 | 67·3 | 64·6 | 85·6 | 52·6 | 6·55 | 12 | 3·46 |
| November ... ... | ·143 | 70·2 | 66·7 | 64·5 | ·088 | 81·3 | 72·2 | 67·7 | ·127 | 70·3 | 67·6 | 64·5 | 84·1 | 52·5 | 6·23 | 25 | 2·41 |
| December ... ... | ·139 | 73·0 | 68·6 | 65·5 | ·088 | 80·3 | 74·4 | 69·6 | ·131 | 71·0 | 69·0 | 66·8 | 85·4 | 52·2 | 3·89 | 8 | 2·83 |
| Mean for Year | 26·135 | 71·9 | 67·0 | 64·2 | 26·077 | 82·3 | 75·6 | 67·7 | 26·119 | 72·6 | 68·1 | 64·9 | 83·8 | 54·9 | Totals 55·45 | 147 | 3·33 |

# Meteorological Statement for the Year 1925.

## MUBENDE.

| Month. | 7 A.M. Dry Bulb. | 7 A.M. Wet Bulb. | 2 P.M. Dry Bulb. | 2 P.M. Wet Bulb. | 9 P.M. Dry Bulb. | 9 P.M. Wet Bulb. | Maximum Temperature. | Minimum Temperature. | Rainfall. | No. of days rain fell. |
|---|---|---|---|---|---|---|---|---|---|---|
| | o | o | o | o | o | o | o | o | In. | |
| January ... | 62·6 | 59·1 | 68·0 | 65·0 | 64·4 | 61·2 | 72·4 | 53·6 | 1·42 | 4 |
| February ... | 64·7 | 61·0 | 78·4 | 63·6 | 71·4 | 62·3 | 81·0 | 60·5 | 1·68 | 5 |
| March ... | 65·1 | 61·4 | 72·3 | 62·7 | 67·1 | 62·2 | 77·6 | 58·0 | 5·23 | 9 |
| April ... | 67·3 | 62·9 | 77·0 | 67·0 | 69·3 | 63·8 | 79·4 | 59·0 | 4·10 | 13 |
| May ... | 66·3 | 62·6 | 78·3 | 66·5 | 70·4 | 64·4 | 80·3 | 59·3 | 3·03 | 16 |
| June ... | 65·9 | 62·0 | 71·0 | 64·7 | 65·0 | 61·6 | 75·1 | 58·0 | 3·28 | 12 |
| July ... | 64·4 | 59·9 | 72·4 | 63·7 | 64·1 | 59·8 | 75·7 | 58·8 | 7·04 | 8 |
| August ... | 63·3 | 60·2 | 73·0 | 65·4 | 64·2 | 60·9 | 76·8 | 59·7 | 2·97 | 11 |
| September... | 64·0 | 61·3 | 76·4 | 67·5 | 66·8 | 62·2 | 76·7 | 62·4 | 4·32 | 11 |
| October ... | 63·5 | 60·7 | 75·0 | 66·3 | 66·4 | 61·8 | 79·6 | 58·2 | 3·54 | 16 |
| November ... | 63·7 | 61·6 | 74·3 | 67·1 | 65·9 | 62·8 | 78·8 | 58·4 | 6·32 | 19 |
| December ... | 63·7 | 60·9 | 76·0 | 67·6 | 66·9 | 63·0 | 79·6 | 56·1 | 4·28 | 12 |
| Mean for Year ... | 64·5 | 61·9 | 74·3 | 65·6 | 66·8 | 62·2 | 77·7 | 58·5 | Totals 47·21 | 136 |

## MASAKA.

| Month. | 7 A.M. Dry Bulb. | 7 A.M. Wet Bulb. | 2 P.M. Dry Bulb. | 2 P.M. Wet Bulb. | 9 P.M. Dry Bulb. | 9 P.M. Wet Bulb. | Maximum Temperature. | Minimum Temperature. | Rainfall | No. of days rain fell. |
|---|---|---|---|---|---|---|---|---|---|---|
| | o | o | o | o | o | o | o | o | In. | |
| January ... | 64·7 | 62·5 | 73·1 | 68·3 | 70·0 | 65·4 | 80·6 | 60·7 | 4·50 | 9 |
| February ... | 65·8 | 63·4 | 74·2 | 65·7 | 71·2 | 66·5 | 81·5 | 60·7 | 2·94 | 4 |
| March ... | 65·4 | 63·4 | 75·8 | 70·1 | 69·3 | 64·6 | 79·6 | 59·8 | 5·92 | 8 |
| April ... | 63·1 | 61·7 | 76·8 | 72·6 | 66·0 | 63·0 | 82·8 | 57·6 | 4·90 | 9 |
| May ... | 65·0 | 62·5 | 75·9 | 64·0 | 65·6 | 62·9 | Unreliable | | 1·31 | 4 |
| June ... | 62·3 | 61·4 | 75·0 | 67·3 | 67·3 | 65·0 | 88·3 | 51·2 | 2·65 | 4 |
| July ... | 62·2 | 59·5 | 71·2 | 65·2 | 66·2 | 63·6 | 79·1 | 63·2 | 2·45 | 5 |
| August ... | 62·4 | 60·3 | 73·8 | 65·4 | 67·0 | 63·0 | 77·2 | 52·1 | 3·29 | 8 |
| September ... | 65·3 | 62·2 | 76·9 | 67·2 | 68·8 | 64·3 | 80·2 | 58·4 | 3·99 | 12 |
| October ... | 66·1 | 63·0 | 78·0 | 68·6 | 69·7 | 65·0 | 82·7 | 59·1 | 7·51 | 20 |
| November ... | 65·5 | 63·3 | 74·4 | 67·5 | 68·3 | 64·5 | 78·7 | 58·5 | 4·07 | 13 |
| December ... | 66·2 | 63·8 | 75·7 | 69·8 | 69·1 | 65·9 | 80·0 | 60·4 | 6·20 | 12 |
| Mean for Year ... | 64·5 | 62·2 | 75·1 | 67·6 | 68·2 | 64·6 | 81·0 | 57·4 | Totals 49·73 | 108 |

## MBARARA.

| Month. | 7 A.M. Dry Bulb. | 7 A.M. Wet Bulb. | 2 P.M. Dry Bulb. | 2 P.M. Wet Bulb. | Maximum Temperature. | Minimum Temperature. | Rainfall. | No. of days rain fell. |
|---|---|---|---|---|---|---|---|---|
| | o | o | o | o | o | o | In. | |
| January ... ... | 63·0 | 60·3 | 76·5 | 66·7 | 78·9 | 56·9 | 1·33 | 5 |
| February ... ... | 65·6 | 62·6 | 79·7 | 68·5 | 81·3 | 58·7 | 0·68 | 2 |
| March ... ... | 64·2 | 61·9 | 78·3 | 68·4 | 82·0 | 58·7 | 4·92 | 6 |
| April ... ... | 64·6 | 62·0 | 78·2 | 68·5 | 81·3 | 57·4 | 1·79 | 5 |
| May ... ... | 64·8 | 62·1 | 78·8 | 68·7 | 80·5 | 55·7 | 2·65 | 9 |
| June ... ... | 64·4 | 61·5 | 76·8 | 67·7 | 81·2 | 57·5 | 2·77 | 7 |
| July ... ... | 65·1 | 62·2 | 78·4 | 69·1 | 82·3 | 55·8 | 0·30 | 2 |
| August ... ... | 65·9 | 62·9 | 78·6 | 69·0 | 82·2 | 57·0 | 0·72 | 2 |
| September ... ... | 66·9 | 63·6 | 80·6 | 69·5 | 83·6 | 57·5 | 3·87 | 9 |
| October ... ... | 66·3 | 63·5 | 79·3 | 72·1 | 82·8 | 57·4 | 3·64 | 10 |
| November ... ... | 67·2 | 64·5 | 71·6 | 67·8 | Unreliable | | 8·32 | 18 |
| December ... ... | 67·7 | 65·9 | 76·1 | 71·8 | 80·6 | 42·3 | 2·83 | 10 |
| Mean for Year ... | 65·5 | 62·7 | 77·7 | 69·0 | 81·5 | 55·9 | Totals 33·82 | 85 |

## FORT PORTAL.

| MONTH. | 7 A.M. | | 2 P.M. | | Maximum Temperature. | Minimum Temperature. | Rainfall | No. of days rain fell. | Sunshine |
|---|---|---|---|---|---|---|---|---|---|
| | Dry Bulb. | Wet Bulb. | Dry Bulb. | Wet Bulb. | | | | | |
| | o | o | o | o | o | o | Ins. | | Hrs. |
| JANUARY ... ... | 57·6 | 55·2 | 73·7 | 64·1 | 78·0 | 56·8 | 0·76 | 4 | 5·00 |
| FEBRUARY ... ... | 57·7 | 56·6 | 79·0 | 64·4 | 81·0 | 58·3 | 1·20 | 3 | 6·36 |
| MARCH ... ... | 59·8 | 58·2 | 72·0 | 66·2 | 78·8 | 59·4 | 4·76 | 12 | 5·13 |
| APRIL ... ... | 60·2 | 57·8 | 74·9 | 68·2 | 78·9 | 59·4 | 2·40 | 8 | 6·32 |
| MAY ... ... | 60·5 | 58·6 | 72·6 | 66·0 | 76·9 | 59·7 | 4·16 | 9 | 4·29 |
| JUNE ... ... | 60·2 | 58·5 | 71·6 | 65·6 | 75·6 | 57·5 | 3·42 | 12 | 4·73 |
| JULY ... ... | 58·8 | 57·2 | 73·7 | 64·7 | 75·1 | 58·3 | 1·98 | 5 | 4·77 |
| AUGUST ... ... | 59·7 | 58·4 | 72·2 | 65·7 | 75·8 | 58·6 | 3·07 | 6 | 4·66 |
| SEPTEMBER... ... | 59·3 | 58·0 | 72·6 | 66·3 | 77·5 | 58·5 | 5·30 | 11 | 4·37 |
| OCTOBER ... ... | 60·5 | 58·2 | 74·2 | 68·8 | 77·6 | 57·5 | 6·33 | 10 | 4·14 |
| NOVEMBER ... .. | 60·5 | 59·0 | 72·1 | 66·7 | 75·5 | 59·3 | 5·27 | 10 | 2·46 |
| DECEMBER ... ... | 59·2 | 58·0 | 71·4 | 65·6 | 76·5 | 58·3 | 3·38 | 7 | 4·57 |
| | | | | | | | TOTALS | | |
| MEAN FOR YEAR | 59·5 | 57·8 | 73·2 | 66·0 | 77·2 | 58·5 | 42·03 | 97 | 4·73 |

## KAMPALA.

| MONTH. | 7 A.M. | | 2 P.M. | | Maximum Temperature. | Minimum Temperature. | Rainfall. | No. of days rain fell. |
|---|---|---|---|---|---|---|---|---|
| | Dry Bulb. | Wet Bulb. | Dry Bulb. | Wet Bulb. | | | | |
| | o | o | o | o | o | o | In. | |
| JANUARY ... ... | 64·3 | 61·9 | 78·4 | 68·3 | 81·1 | 59·3 | 4·50 | 16 |
| FEBRUARY ... ... | 64·1 | 62·1 | 80·0 | 68·1 | 83·1 | 60·9 | 2·20 | 13 |
| MARCH ... ... | 65·9 | 63·6 | 79·6 | 70·7 | 82·6 | 61·5 | 6·07 | 16 |
| APRIL ... ... | 68·9 | 65·7 | 79·7 | 71·8 | 85·5 | 63·7 | 4·27 | 18 |
| MAY ... ... | 69·4 | 67·0 | 81·1 | 73·7 | 82·2 | 62·4 | 2·87 | 22 |
| JUNE ... ... | 68·1 | 65·3 | 77·8 | 70·5 | 82·3 | 59·9 | 5·96 | 17 |
| JULY ... ... | 67·3 | 63·7 | 79·4 | 69·7 | 83·3 | 59·0 | 3·31 | 10 |
| AUGUST ... ... | 65·7 | 63·4 | 78·8 | 70·4 | 82·2 | 58·3 | 2·78 | 13 |
| SEPTEMBER ... ... | 67·2 | 64·1 | 81·5 | 71·1 | 84·8 | 59·1 | 4·92 | 11 |
| OCTOBER ... ... | 65·9 | 63·5 | 79·2 | 70·5 | 82·6 | 61·2 | 7·73 | 20 |
| NOVEMBER ... ... | 65·0 | 63·5 | 76·0 | 68·0 | 79·0 | 61·4 | 6·06 | 22 |
| DECEMBER ... ... | 65·5 | 63·9 | 75·2 | 70·1 | 79·9 | 60·1 | 3·19 | 27 |
| | | | | | | | TOTALS | |
| MEAN FOR YEAR ... | 66·4 | 64·0 | 78·9 | 70·2 | 82·4 | 60·6 | 53·86 | 205 |

## GULU.

| MONTH. | 7 A.M. | | 2 P.M. | | Maximum Temperature. | Minimum Temperature. | Rainfall. | No of days rain fell |
|---|---|---|---|---|---|---|---|---|
| | Dry Bulb. | Wet Bulb. | Dry Bulb. | Wet Bulb. | | | | |
| | o | o | o | o | o | o | In. | |
| JANUARY ... ... | 72·0 | 61·8 | 83·9 | 64·9 | 86·5 | 65·9 | — | — |
| FEBRUARY ... ... | 75·3 | 62·3 | 87·4 | 63·1 | 90·4 | 67·8 | 0·06 | 3 |
| MARCH ... ... | 75·5 | 65·8 | 81·7 | 67·5 | Unreliable | | 5·16 | 12 |
| APRIL ... ... | 74·9 | 68·1 | 84·1 | 66·8 | Unreliable | | 2·71 | 8 |
| MAY ... ... | 72·5 | 67·3 | 78·9 | 70·1 | 91·5 | 63·9 | 9·25 | 13 |
| JUNE ... ... | 70·8 | 66·5 | 76·7 | 70·7 | 81·7 | 64·7 | 4·53 | 8 |
| JULY ... ... | 69·2 | 65·1 | 78·6 | 68·1 | Unreliable | | 7·64 | 12 |
| AUGUST ... ... | 68·9 | 65·6 | 79·3 | 68·6 | Unreliable | | 7·24 | 13 |
| SEPTEMBER ... ... | 73·7 | 67·4 | 81·7 | 69·7 | 85·1 | 60·8 | 2·57 | 8 |
| OCTOBER ... ... | 74·2 | 67·1 | 81·8 | 69·2 | 85·8 | 63·3 | 10·10 | 13 |
| NOVEMBER ... ... | 72·2 | 67·2 | 79·5 | 68·6 | 84·3 | 66·5 | 10·26 | 16 |
| DECEMBER ... ... | 74·6 | 66·2 | 79·5 | 68·4 | 84·5 | 63·7 | 1·48 | 3 |
| | | | | | | | TOTALS | |
| MEAN FOR YEAR | 72·8 | 65·9 | 81·1 | 68·0 | 86·2 | 64·6 | 61·00 | 109 |

## BOMBO.

| MONTH. | 7 A.M. | | Maximum Temperature. | Minimum Temperature. | Rainfall. | No. of days rain fell. | Sunshine. |
|---|---|---|---|---|---|---|---|
| | Dry Bulb. | Wet Bulb. | | | | | |
| | ° | ° | ° | ° | Ins. | | Hrs. |
| JANUARY ... ... ... | 68·6 | 66·8 | 81·0 | 61·0 | 3·32 | 8 | 4·92 |
| FEBRUARY ... ... ... | 73·0 | 68·1 | 84·9 | 61·4 | 0·90 | 7 | 5·20 |
| MARCH ... ... ... | 69·7 | 67·4 | 83·1 | 61·5 | 5·18 | 11 | 4·84 |
| APRIL ... ... ... | 73·5 | 69·9 | 83·0 | 63·3 | 2·83 | 12 | 6·82 |
| MAY .. ... ... | 71·5 | 67·9 | 81·6 | 63·0 | 2·98 | 12 | 5·48 |
| JUNE ... ... ... | 70·7 | 66·7 | 78·3 | 60·9 | 5·35 | 12 | 5·22 |
| JULY ... ... .. | 69·1 | 65·4 | 78·8 | 60·3 | 3·22 | 13 | 6·15 |
| AUGUST ... ... ... | 68·8 | 65·7 | 86·4 | 61·4 | 2·32 | 11 | 6·32 |
| SEPTEMBER ... ... ... | 72·4 | 66·4 | 83·3 | 60·4 | 1·90 | 11 | 6·57 |
| OCTOBER ... ... ... | 71·7 | 67·8 | 83·6 | 61·8 | 5·06 | 13 | 7·44 |
| NOVEMBER ... ... ... | 69·8 | 67·7 | 79·8 | 62·3 | 8·25 | 17 | 5·45 |
| DECEMBER ... ... ... | 70·1 | 68·5 | 82·9 | 61·5 | 3·42 | 7 | 6·18 |
| MEAN FOR YEAR ... | 70·7 | 67·4 | 82·2 | 61·6 | TOTALS 44·73 | 134 | 6·12 |

## MBALE.

| MONTH. | 7 A.M. | | 2 P.M. | | Maximum Temperature. | Minimum Temperature. | Rainfall. | No. of days rain fell. |
|---|---|---|---|---|---|---|---|---|
| | Dry Bulb | Wet Bulb. | Dry Bulb. | Wet Bulb. | | | | |
| | o | o | o | o | o | o | Ins. | |
| JANUARY ... ... | 65·5 | 61·6 | 80·1 | 62·6 | 82·1 | 62·1 | 1·85 | 10 |
| FEBRUARY ... | 65·9 | 61·0 | 80·6 | 66·5 | 86·2 | 62·5 | 1·20 | 6 |
| MARCH ... ... | 67·5 | 63·7 | 80·6 | 68·0 | 85·6 | 63·8 | 4·04 | 15 |
| APRIL ... ... | 68·4 | 64·5 | 81·2 | 69·7 | No records | | 3·35 | 11 |
| MAY ... ... | 67·5 | 64·8 | 77·2 | 69·8 | 82·0 | 63·5 | 6·06 | 21 |
| JUNE ... ... | 65·8 | 63·7 | 77·2 | 69·2 | 81·8 | 63·5 | 3·14 | 17 |
| JULY ... ... | 65·6 | 62·7 | 76·0 | 67·8 | 80·8 | 62·3 | 2·44 | 8 |
| AUGUST ... ... | 63·6 | 61·4 | 76·1 | 67·2 | 81·1 | 62·3 | 7·29 | 13 |
| SEPTEMBER ... | 64·8 | 62·2 | 80·0 | 69·4 | 84·0 | 62·0 | 3·48 | 8 |
| OCTOBER ... ... | 66·6 | 63·2 | 79·4 | 69·3 | 83·5 | 62·6 | 4·12 | 16 |
| NOVEMBER ... | 65·6 | 63·6 | 78·4 | 66·5 | 81·3 | 63·0 | 5·11 | 12 |
| DECEMBER .. | 66·0 | 63·8 | 79·1 | 68·3 | 84·0 | 63·0 | 0·83 | 4 |
| MEAN FOR YEAR | 66·1 | 63·0 | 78·8 | 67·9 | 82·9* | 62·8* | TOTALS 42·91 | 141 |

*Maximum and Minimum data for eleven months only.

**Appendix No. 12**—*continued.*

# Meteorological Statement for the Year 1925.

## BUKALASA.

| Month. | Maximum Temperature. | Minimum Temperature. | Rainfall. | Number of days rain fell. |
|---|---|---|---|---|
| | o | o | Ins. | |
| January ... | 84·1 | 61·6 | 2·77 | 10 |
| February | 86·5 | 61·5 | 2·10 | 6 |
| March ... | 83·2 | 62·4 | 9·33 | 14 |
| April ... | 85·5 | 64·2 | 2·47 | 13 |
| May ... | 82·5 | 63·8 | 4·48 | 13 |
| June ... | 80·6 | 61·5 | 3·68 | 13 |
| July ... | 80·5 | 61·5 | 5·98 | 14 |
| August .. | 81·8 | 62·1 | 4·21 | 12 |
| September | 85·6 | 62·6 | 3·90 | 15 |
| October ... | 86·3 | 63·6 | 8·52 | 19 |
| November | 83·4 | 64·1 | 6·81 | 23 |
| December | 85·0 | 62·9 | 3·49 | 13 |
| Mean for Year ... | 83·7 | 62·7 | Totals 57·74 | 165 |

## SERERE.

| Month. | Maximum Temperature. | Minimum Temperature. | Rainfall. | Number of days rain fell. |
|---|---|---|---|---|
| | o | o | Ins. | |
| January... | 90·8 | 63·9 | 0·83 | 8 |
| February | 95·0 | 65·3 | 0·72 | 5 |
| March ... | 87·7 | 64·9 | 5·95 | 13 |
| April ... | 85·7 | 66·0 | 6·25 | 13 |
| May ... | 82·6 | 65·1 | 5·47 | 15 |
| June ... | 83·3 | 64·6 | 6·99 | 15 |
| July ... | 78·4 | 64·9 | 5·25 | 16 |
| August ... | 81·1 | 63·6 | 5·63 | 16 |
| September | 84·8 | 64·5 | 3·46 | 20 |
| October... | 84·8 | 65·2 | 7·74 | 13 |
| November | 81·7 | 64·8 | 6·89 | 14 |
| December | 84·4 | 65·3 | 1·51 | 7 |
| Mean for Year ... | 85·0 | 64·8 | Totals 56·69 | 143 |

## MASINDI.

| Month. | Maximum Temperature. | Minimum Temperature. | Rainfall. | No. of days of rain. | Sunshine. |
|---|---|---|---|---|---|
| | o | o | Ins. | | Hrs. |
| January ... | 83·3 | 60·3 | 0·95 | 3 | 6·54 |
| February | 89·5 | 61·9 | 1·15 | 4 | 6·87 |
| March ... | 87·8 | 62·6 | 3·86 | 9 | 7·05 |
| April ... | 89·1 | 63·4 | 3·44 | 7 | 7·52 |
| May ... | 87·3 | 62·1 | 3·19 | 10 | 7·47 |
| June ... | 84·5 | 60·6 | 5·96 | 12 | 6·69 |
| July ... | 84·4 | 60·1 | 3·24 | 9 | 6·54 |
| August ... | 84·9 | 59·5 | 2·24 | 10 | 6·02 |
| September | 86·6 | 60·2 | 2·40 | 7 | 6·58 |
| October ... | 85·0 | 61·4 | 7·68 | 15 | 7·39 |
| November | 82·3 | 61·6 | 7·10 | 18 | 6·42 |
| December | 85·5 | 62·2 | 1·39 | 7 | 8·09 |
| Mean for Year ... | 85·8 | 61·3 | Totals 42·60 | 111 | 6·93 |

## SIMSA.

| Month. | Maximum Temperature. | Minimum Temperature. | Rainfall. | Number of days rain fell. |
|---|---|---|---|---|
| | o | o | Ins. | |
| January... | 91·0 | 64·3 | 0·50 | 3 |
| February | 93·8 | 66·6 | 0·36 | 5 |
| March ... | 90·0 | 67·0 | 5·02 | 14 |
| April ... | 90·0 | 66·9 | 2·94 | 8 |
| May ... | 84·6 | 65·9 | 6·50 | 15 |
| June ... | No records | | 4·01 | 8 |
| July ... | 82·7 | 64·5 | 4·78 | 14 |
| August ... | 82·4 | 64·3 | 15·92 | 19 |
| September | N. R. | 65·1 | 3·06 | 10 |
| October ... | 90·1 | 63·6 | 7·66 | 11 |
| November | 85·1 | 64·6 | 10·93 | 13 |
| December | N. R. | 63·4 | 2·38 | 6 |
| Mean for Year ... | 80·0* | 65·1* | Totals 64·06 | 126 |

## ARUA.

| Month. | Maximum Temperature. | Minimum Temperature. | Rainfall. | Number of days rain fell |
|---|---|---|---|---|
| | o | o | Ins. | |
| January ... | 82·9 | 62·2 | 0·12 | 1 |
| February | 86·3 | 63·6 | 1·29 | 5 |
| March ... | 82·6 | 64·8 | 2·29 | 9 |
| April ... | 83·6 | 64·6 | 4·53 | 7 |
| May ... | 79·1 | 63·3 | 5·79 | 11 |
| June ... | 77·1 | 61·6 | 3·83 | 7 |
| July ... | 75·8 | 61·8 | 2·39 | 9 |
| August ... | 74·5 | 69·9 | 4·86 | 5 |
| September | 78·3 | 62·8 | 3·37 | 9 |
| October ... | 79·5 | 63·0 | 7·55 | 12 |
| November | 79·6 | 62·8 | 8·18 | 13 |
| December | 82·6 | 64·6 | 0·68 | 3 |
| Mean for Year ... | 80·2 | 63·0 | Totals 44·88 | 91 |

## NAGICHOT.

| Month. | Maximum Temperature. | Minimum Temperature. | Rainfall. | Number of days rain fell |
|---|---|---|---|---|
| | o | o | Ins. | |
| January ... | 74·2 | 56·4 | 0·23 | 1 |
| February | 76·7 | 58·1 | 0·72 | 4 |
| March ... | 76·2 | 59·3 | 3·59 | 8 |
| April ... | 76·7 | 60·4 | 0·71 | 3 |
| May ... | 71·7 | 58·2 | 5·84 | 12 |
| June ... | 68·9 | 56·8 | 5·37 | 14 |
| July ... | 67·7 | 56·5 | 7·41 | 15 |
| August ... | 68·1 | 55·6 | 4·04 | 14 |
| September | 74·6 | 55·8 | 0·22 | 2 |
| October ... | 75·5 | 57·0 | 1·08 | 3 |
| November | 71·0 | 56·2 | 6·12 | 11 |
| December | 74·6 | 57·8 | 0·09 | 1 |
| Mean for Year ... | 72·9 | 57·1 | Totals 35·42 | 89 |

*Maximum and Minimum data for nine months.

## Comparative Rainfall Statement, showing the Monthly Rainfall for the Year 1925, of Fifty-one Localities of the Uganda Protectorate.

| MONTH | Arua. | | Bombo. | | Budo. | | Bugondo. | | Bukalasa. | | Bukumi. | | Butiaba. | | Butiti. | | Bwavu. | | Bubulu. | | Entebbe. | | Fort Portal. | | Gulu. | | Hoima. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In. | No. of days. | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days |
| JANUARY | 0·12 | 1 | 3·32 | 8 | 1·21 | 8 | 0·61 | 4 | 2·77 | 10 | 1·07 | 2 | 0·04 | 1 | No reco | rds | 3·82 | 12 | ... | ... | 5·11 | 16 | 0·76 | 4 | Nil | ... | 1·81 | 3 |
| FEBRUARY | 1·29 | 5 | 0·90 | 7 | 1·15 | 8 | 0·28 | 1 | 2·10 | 6 | 2·30 | 4 | 0·28 | 1 | 1·40 | 3 | 3·22 | 11 | ... | ... | 3·33 | 8 | 1·20 | 3 | 0·06 | 3 | 2·14 | 4 |
| MARCH | 2·29 | 9 | 5·18 | 11 | 4·58 | 10 | 6·55 | 11 | 9·33 | 14 | 5·57 | 10 | 3·67 | 8 | 5·28 | 9 | 5·43 | 14 | ... | ... | 8·99 | 17 | 4·76 | 12 | 5·16 | 12 | 7·30 | 12 |
| APRIL | 4·53 | 7 | 2·83 | 12 | 5·16 | 10 | 4·17 | 8 | 2·47 | 13 | 2·63 | 5 | 0·95 | 3 | 3·22 | 13 | 5·10 | 11 | ... | ... | 9·17 | 16 | 2·40 | 8 | 2·71 | 8 | 2·41 | 8 |
| MAY | 5·79 | 11 | 2·98 | 12 | 2·59 | 11 | 4·72 | 12 | 4·48 | 13 | 4·51 | 13 | 1·77 | 3 | 3·42 | 13 | 7·29 | 19 | ... | ... | 3·57 | 14 | 4·16 | 9 | 9·25 | 13 | 4·44 | 13 |
| JUNE | 3·83 | 7 | 5·35 | 12 | 4·45 | 12 | 4·20 | 8 | 3·68 | 13 | No reco | rds | 1·87 | 3 | 4·28 | 10 | 7·02 | 19 | ... | ... | 2·21 | 10 | 3·42 | 12 | 4·53 | 8 | 5·14 | 14 |
| JULY | 2·39 | 9 | 3·22 | 13 | 2·95 | 7 | 3·59 | 13 | 5·98 | 14 | 1·87 | 4 | 1·22 | 4 | 1·91 | 3 | 1·75 | 8 | ... | ... | 0·93 | 8 | 1·98 | 5 | 7·64 | 12 | 5·77 | 11 |
| AUGUST | 4·86 | 5 | 2·32 | 11 | 4·01 | 5 | 6·54 | 11 | 4·21 | 12 | 1·95 | 7 | 1·53 | 4 | 2·28 | 14 | 5·44 | 16 | 3·55 | 18 | 3·83 | 6 | 3·07 | 6 | 7·24 | 13 | 2·71 | 11 |
| SEPTEMBER | 3·37 | 9 | 1·90 | 11 | 4·24 | 6 | 1·20 | 5 | 3·90 | 15 | 4·37 | 9 | 0·65 | 2 | 5·64 | 11 | 4·46 | 10 | 6·46 | 16 | 1·01 | 7 | 5·30 | 11 | 2·57 | 8 | 9·66 | 16 |
| OCTOBER | 7·55 | 12 | 5·06 | 13 | 3·47 | 10 | 5·95 | 12 | 8·52 | 19 | 4·25 | 8 | 6·91 | 9 | 8·13 | 12 | 6·42 | 13 | 4·66 | 12 | 5·48 | 18 | 6·33 | 10 | 10 10 | 13 | 8 14 | 14 |
| NOVEMBER | 8·18 | 13 | 8·25 | 17 | 2·25 | 10 | 5·57 | 9 | 6·81 | 23 | 7·57 | 9 | 1·81 | 3 | 8·21 | 20 | 7·46 | 23 | 19·50 | 23 | 4·88 | 16 | 5·27 | 10 | 10·26 | 16 | 10·58 | 19 |
| DECEMBER | 0·68 | 3 | 3·42 | 7 | 1·46 | 6 | 2·10 | 3 | 3·49 | 13 | 1·77 | 5 | 1·17 | 4 | 7·40 | 5 | 8·34 | 18 | 7·53 | 14 | 5·17 | 18 | 3·38 | 7 | 1·48 | 3 | 2·69 | 6 |
| TOTAL | 44·88 | 91 | 44·73 | 134 | 37·52 | 103 | 45·48 | 97 | 57·74 | 165 | 37·86 | 76 | 21·87 | 45 | 51·17 | 113 | 65·75 | 174 | 41·70 | 83 | 53·68 | 154 | 42·03 | 97 | 61·00 | 109 | 62·79 | 131 |

| MONTH | Hoima River. | | Jinja. | | Kabale. | | Kakumiro. | | Kampala. | | Katigondo. | | Kewezike. | | Kisubi. | | Kitgum. | | Kivuvu. | | Kilclooney. | | Lalli Port. | | Lira. | | Magigye. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In. | No. of days | In. | No of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No of days | In. | No. of days | In. | No. of days | In. | No. of days |
| JANUARY | 0·50 | 3 | 3·55 | 10 | 1·91 | 5 | 1·12 | 7 | 4·50 | 16 | 2·36 | 7 | 3·54 | 5 | 4·50 | 8 | 0·19 | 3 | 5·24 | 8 | 1·48 | 7 | 0·33 | 4 | 2·06 | 2 | 3·05 | 7 |
| FEBRUARY | 1·51 | 6 | 2·51 | 8 | 4·68 | 6 | 1·22 | 7 | 2·20 | 13 | 3·28 | 5 | 1·97 | 3 | 3·08 | 10 | 0·32 | 3 | 1·75 | 8 | 3·49 | 9 | 0·71 | 3 | 0·67 | 3 | 1·98 | 5 |
| MARCH | 5·74 | 12 | 7·56 | 16 | 6·05 | 11 | 6·61 | 15 | 6·07 | 16 | 5·94 | 10 | 7·84 | 11 | 6·11 | 12 | 2·10 | 7 | 5·31 | 12 | 7·51 | 13 | 7·20 | 14 | 4·71 | 10 | 5·32 | 9 |
| APRIL | 4·98 | 13 | 7·86 | 13 | 1·50 | 5 | 5·53 | 15 | 4·27 | 18 | 2·50 | 5 | 5·06 | 10 | 14·26 | 14 | 3·19 | 11 | 5·72 | 10 | 9·44 | 18 | 3·44 | 9 | 1·69 | 5 | 8·06 | 15 |
| MAY | 6·26 | 13 | 2·60 | 11 | 1·70 | 3 | 5·27 | 17 | 2·87 | 22 | 1·96 | 5 | 4·74 | 11 | 2·55 | 11 | 6·83 | 13 | 6·20 | 12 | 5·93 | 15 | 5·45 | 14 | 3·71 | 13 | 3·26 | 17 |
| JUNE | 6·09 | 13 | 3·56 | 15 | 4·30 | 5 | 5·34 | 14 | 5·96 | 17 | 2·98 | 5 | 2·87 | 8 | 2·52 | 8 | 5·29 | 15 | 6·02 | 17 | 4·62 | 18 | 5·46 | 12 | 3·99 | 11 | 3·41 | 15 |
| JULY | 3·39 | 15 | 3·42 | 8 | 2·30 | 2 | 2·28 | 10 | 3·31 | 10 | 1·57 | 5 | 1·02 | 5 | 1·89 | 8 | 3·37 | 13 | 2·59 | 9 | 5·61 | 10 | 2·83 | 11 | 4·71 | 13 | 4·66 | 10 |
| AUGUST | 3·87 | 13 | 3·11 | 10 | 1·40 | 3 | 2·48 | 13 | 2·78 | 13 | 2·82 | 7 | 2 55 | 7 | 3·40 | 6 | 3·19 | 12 | 4·69 | 10 | 3·11 | 8 | 8·69 | 16 | 6·46 | 13 | 4·72 | 13 |
| SEPTEMBER | 7·80 | 18 | 4·61 | 11 | 2·50 | 3 | 5·26 | 13 | 4·92 | 11 | 1·55 | 7 | 3·21 | 6 | 2·48 | 7 | 4·55 | 14 | 4·77 | 8 | 4·04 | 18 | 1·69 | 8 | 2·19 | 7 | 4·12 | 7 |
| OCTOBER | 8·43 | 22 | 6·55 | 12 | 3·90 | 5 | 4·14 | 15 | 7·73 | 20 | 5·05 | 16 | 4·42 | 8 | 5·94 | 12 | 4·82 | 16 | 6·84 | 10 | 9·40 | 21 | 7·00 | 13 | 6·56 | 15 | 9·81 | 16 |
| NOVEMBER | 8·73 | 21 | 6·23 | 25 | 5·22 | 6 | 9·67 | 20 | 6·06 | 22 | 8·78 | 15 | 7·00 | 17 | 4·17 | 13 | 6·52 | 17 | 6·39 | 19 | 9·87 | 28 | 6·70 | 15 | 4·98 | 13 | 4·84 | 15 |
| DECEMBER | 2·79 | 12 | 3·89 | 8 | 1·95 | 2 | 4·54 | 11 | 3·19 | 27 | 2·66 | 8 | 5·30 | 10 | 3·83 | 15 | 1·36 | 4 | 5·84 | 12 | 4·40 | 9 | 2·08 | 4 | 2·52 | 6 | 2·74 | 7 |
| TOTAL | 60·09 | 161 | 55·45 | 147 | 37·41 | 56 | 53·46 | 157 | 53·86 | 205 | 41·45 | 95 | 49·52 | 101 | 54·73 | 124 | 41·73 | 128 | 61·86 | 135 | 68·90 | 174 | 51·58 | 123 | 44·25 | 111 | 55·97 | 136 |

## Comparative Rainfall Statement, showing the Monthly Rainfall for the year 1925, of Fifty-one Localities of the Uganda Protectorate—*continued.*

| Month | Mairye. | | Masaka. | | Masindi. | | Masindi Port. | | Mbale. | | Mbarara. | | Moniko. | | Moroto. | | Mubende. | | Mulange. | | Mutai. | | Nagichot. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days |
| January ... ... | 1·62 | 3 | 4·50 | 9 | 0·95 | 3 | 1·10 | 5 | 1·85 | 10 | 1·33 | 5 | No records | | 1·90 | 1 | 1·42 | 4 | 1·45 | 4 | 0·59 | 2 | 0·23 | 1 |
| February ... ... | 3·77 | 8 | 2·94 | 4 | 1·15 | 4 | 2·44 | 4 | 1·20 | 6 | 0·68 | 2 | 1·35 | 7 | Nil | ... | 1·68 | 5 | 1·08 | 4 | 3·61 | 5 | 0·72 | 4 |
| March ... ... | 3·79 | 8 | 5·92 | 8 | 3·86 | 9 | 3·46 | 6 | 4·04 | 15 | 4·92 | 6 | 5·25 | 11 | 2·40 | 6 | 5·23 | 9 | 10·50 | 11 | 7·53 | 6 | 3·59 | 8 |
| April ... ... | 3·59 | 5 | 4·20 | 9 | 3·44 | 7 | 6·71 | 8 | 3·35 | 11 | 1·79 | 5 | 5·84 | 8 | 0·86 | 3 | 4·10 | 13 | 7·16 | 7 | 5·69 | 8 | 0·71 | 3 |
| May ... ... | 2·75 | 6 | 1·31 | 4 | 3·19 | 10 | 2·87 | 9 | 6·06 | 21 | 2·65 | 9 | 2·89 | 8 | 8·61 | 8 | 3·03 | 16 | 3·59 | 7 | 3·42 | 7 | 5·84 | 12 |
| June ... ... | 5·84 | 10 | 2·65 | 4 | 5·96 | 12 | 3·15 | 9 | 3·14 | 17 | 2·77 | 7 | 5·04 | 12 | 3·05 | 8 | 3·28 | 12 | 2·45 | 2 | 2·90 | 8 | 5·37 | 14 |
| July ... ... | 2·59 | 4 | 2·45 | 5 | 3·24 | 9 | 1·95 | 5 | 2·44 | 8 | 0·30 | 2 | 1·61 | 5 | 7·93 | 10 | 7·04 | 8 | 3·88 | 5 | 1·65 | 3 | 7·41 | 16 |
| August ... ... | 3·54 | 4 | 3·29 | 8 | 2·24 | 10 | Nil | ... | 7·29 | 13 | 0·72 | 2 | 2·60 | 9 | 4·54 | 7 | 2·97 | 11 | 4·20 | 4 | 3·52 | 7 | 4·04 | 14 |
| September ... ... | ... | ... | 3·99 | 12 | 2·40 | 7 | 3·31 | 5 | 3·48 | 8 | 3·87 | 9 | 4·50 | 10 | Nil | ... | 4·32 | 11 | 7·03 | 5 | 2·41 | 5 | 0·22 | 2 |
| October ... ... | ... | ... | 7·51 | 20 | 7·68 | 15 | 6·63 | 15 | 4·12 | 16 | 3·64 | 10 | 8·67 | 9 | 0·90 | 1 | 3·54 | 16 | 9·04 | 8 | 3·82 | 6 | 1·08 | 3 |
| November ... ... | ... | ... | 4·07 | 13 | 7·10 | 18 | 7·42 | 14 | 5·11 | 12 | 8·32 | 18 | 7·83 | 15 | 6·50 | 10 | 6·32 | 19 | 8·38 | 12 | 8·12 | 18 | 6·12 | 12 |
| December ... ... | ... | ... | 6·20 | 12 | 1·39 | 7 | 0·93 | 9 | 0·83 | 4 | 2·83 | 10 | 5·66 | 9 | Nil | ... | 4·28 | 12 | 5·20 | 7 | 6·08 | 8 | 0·09 | 1 |
| Total ... | 27·49 | 48 | 49·73 | 108 | 42·60 | 111 | 39·97 | 89 | 42·91 | 141 | 33·82 | 85 | 51·24 | 103 | 36·69 | 59 | 47·21 | 136 | 63·96 | 76 | 49·34 | 83 | 35·42 | 89 |

| Month | Nagoje. | | Namasagali. | | Namukekera. | | Nandere. | | Ngora. | | Nsambya. | | Nyondo. | | Rubaga. | | Serere. | | Simsa. | | Sozi. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days | In. | No. of days |
| January ... ... ... ... | 5·57 | 7 | 1·77 | 5 | 2·82 | 7 | 3·85 | 5 | 0·09 | 1 | 5·73 | 10 | ... | ... | 3·85 | 5 | 0·83 | 8 | 0·50 | 3 | 5·65 | 11 |
| February ... ... ... ... | 1·67 | 7 | Nil | ... | 1·74 | 3 | 5·10 | 8 | 0·49 | 4 | 0·92 | 6 | ... | ... | 2·54 | 5 | 0·72 | 5 | 0·36 | 5 | 7·86 | 11 |
| March ... ... ... ... | 5·25 | 13 | 6·78 | 10 | 6·81 | 8 | 6·68 | 9 | 3·78 | 13 | 5·63 | 9 | ... | ... | 5·79 | 12 | 5·95 | 13 | 5·02 | 14 | 7·15 | 15 |
| April ... ... ... ... | 6·40 | 9 | 2·33 | 6 | 1·77 | 8 | 4·68 | 9 | 4·15 | 8 | 6·17 | 8 | .. | ... | 6·80 | 9 | 6·25 | 13 | 2·94 | 8 | 7·11 | 10 |
| May ... ... ... ... | 2·86 | 12 | 7·16 | 8 | 5·09 | 12 | 2·58 | 12 | 3·76 | 12 | 3·79 | 6 | ... | ... | 4·27 | 7 | 5·47 | 15 | 6·50 | 15 | 7·91 | 18 |
| June ... ... ... ... | 6·64 | 13 | 2·95 | 8 | 0·94 | 3 | 4·64 | 6 | 5·92 | 10 | 6·19 | 13 | ... | ... | 5·16 | 12 | 6·99 | 15 | 4·01 | 8 | 2·43 | 9 |
| July ... ... ... ... | 2·18 | 7 | 1·57 | 10 | 3·23 | 5 | 3·68 | 6 | 6·38 | 13 | 3·16 | 7 | ... | ... | 3·37 | 4 | 5·25 | 16 | 4·78 | 14 | 2·64 | 8 |
| August ... ... ... ... | 4·66 | 13 | 7·21 | 9 | 2·85 | 6 | 2·96 | 6 | 10·89 | 10 | 2·83 | 7 | 3·95 | 8 | 2·34 | 6 | 5·63 | 16 | 15·92 | 19 | 4·19 | 14 |
| September ... ... ... ... | 3·41 | 9 | 2·58 | 8 | 4·81 | 7 | 2·23 | 5 | 4·33 | 8 | 3·59 | 5 | 3·61 | 8 | 6·89 | 8 | 3·46 | 8 | 3·06 | 10 | 2·21 | 7 |
| October ... ... ... ... | 4·32 | 9 | 4·57 | 9 | 4·11 | 8 | 5·20 | 10 | 6·37 | 13 | 7·68 | 10 | 5·60 | 12 | 6·06 | 7 | 7·74 | 13 | 7·66 | 11 | 6·80 | 17 |
| November ... ... ... ... | 6·48 | 18 | 7·51 | 14 | 7·05 | 11 | 7·39 | 10 | 8·31 | 12 | 5·35 | 11 | 9·29 | 17 | 8·15 | 12 | 6·89 | 14 | 10·93 | 13 | 16·61 | 21 |
| December ... ... ... ... | 3·81 | 12 | 2·68 | 5 | 4·64 | 12 | ... | ... | 0·58 | 6 | 1·58 | 3 | 2·48 | 10 | 2·57 | 5 | 1·51 | 7 | 2·38 | 6 | 7·92 | 14 |
| Total ... ... ... | 53·25 | 129 | 47·11 | 92 | 45·86 | 90 | 48·99 | 86 | 55·05 | 110 | 52·62 | 95 | 24·93 | 55 | 57·79 | 92 | 56·69 | 143 | 64·06 | 126 | 78·48 | 155 |

## Statement showing Situations and Latitudes, Longitudes and Heights of the Meteorological Stations of the Uganda Protectorate.

| *Station.* | *Province.* | *Latitude.* | *Longitude.* | *Approximate Height above Mean Sea Level in feet.* |
|---|---|---|---|---|
| *Arua | Northern | 3°01′ N. | 30°55′ E. | 4200 |
| *Bombo | Buganda | 0°35′ N. | 32°32′ E. | 3970 |
| Budo | ,, | 0°16′ N. | 32°29′ E. | 4300 |
| Bugondo | Eastern | 1°37′ N. | 33°17′ E. | 3500 |
| *Bukalasa | Buganda | 0°43′ N. | 32°30′ E. | 3700 |
| Bukumi | ,, | 0°49′ N. | 31°20′ E. | 4200 |
| Butiaba | Northern | 1°50′ N. | 31°20′ E. | 2000 |
| Butiti | Western | 0°39′ N. | 30°32′ E. | 4700 |
| Bwavu | Buganda | 0°21′ N. | 33° 1′ E. | 4270 |
| *Entebbe | ,, | 0°4′31″ N. | 32°28′ 30″ E. | 3850 |
| *Fort Portal | Western | 0°40′ N. | 30°17′ E. | 5300 |
| *Gulu | Northern | 2°45′ N. | 32°20′ E. | 3700 |
| Hoima | ,, | 1°26′ N. | 31°22′ E. | 3800 |
| Hoima River E. | ,, | 1°30′ N. | 31°21′ E. | 4000 |
| *Jinja | Eastern | 0°26′ N. | 33°12′ E. | 3880 |
| Kabale | Western | 1°15′ S. | 29°59′ E. | 6000 |
| Kakumiro | Buganda | 0°46′ N. | 31°19′ E. | 4500 |
| Kakamari | Eastern | 3°29′ N. | 34° 6′ E. | 5000 |
| *Kampala | Buganda | 0°19′ N. | 32°35′ E. | 3900 |
| Katigondo | ,, | 0°13′ S. | 31°44′ E. | 4300 |
| Kewezike | ,, | 0°11′ N. | 32° 5′ E. | 4000 |
| Kisubi | ,, | 0° 7′ N. | 32°32′ E. | 3850 |
| *Kitgum | Eastern | 3°20′ N. | 32°53′ E. | 3000 |
| Kivuvu | Buganda | 0°23′ N. | 32°47′ E. | 3700 |
| Kilclooney | Western | 0°30′ N. | 30°18′ E. | 5200 |
| Lale | Eastern | 1°42′ N. | 33°28′ E. | 3400 |
| Lira | ,, | 2°15′ N. | 32°55′ E. | 3700 |
| Magigye | Buganda | 0°29′ N. | 32°36′ E. | — |
| Mairye | ,, | 0°32′ N. | 32°40′ E. | 3500 |
| *Masaka | ,, | 0°20′ S. | 31°44′ E. | 4200 |
| *Masindi | Northern | 1°41′ N. | 31°43′ E. | 3750 |
| Masindi Port | ,, | 1°42′ N. | 32° 5′ E. | 3360 |
| *Mbale | Eastern | 1° 6′ N. | 34°11′ E. | 4000 |
| Mbarara | Western | 0°37′ S. | 30°39′ E. | 4800 |
| Moniko | Buganda | 0°23′ N. | 32°54′ E. | 5100 |
| Moroto | Eastern | 2°34′ N. | 34°42′ E. | 5000 |
| *Mubende | Buganda | 0°35′ N. | 31°22′ E. | 5120 |
| Mulange | ,, | 0°31′ N. | 33° 3′ E. | 4250 |
| Mutai | Eastern | 0°34′ N. | 33°14′ E. | 3600 |
| *Nagichot | Mongalla, Soudan | 4°20′ N. | 33°29′ E. | 6670 |
| Nagoje | Buganda | 0°27′ N. | 32°53′ E. | 3780 |
| Namasagali | Eastern | 1° 0′ N. | 32°57′ E. | 3400 |
| Namukekera | Buganda | 0°41′ N. | 32°14′ E. | 3700 |
| Nandere | ,, | 0°37′ N. | 32°20′ E. | 3900 |
| Ngora | Eastern | 1°27′ N. | 33°46′ E. | 3700 |
| Nsambya | Buganda | 0°18′ N. | 32°34′ E. | 4020 |
| Nyondo | Eastern | 1° 1′ N. | 34°14′ E. | 4500 |
| Rubaga | Buganda | 0°18′ N. | 32°33′ E. | 4130 |
| *Serere | Eastern | 1°31′ N. | 33°27′ E. | 3600 |
| *Simsa (Soroti) | ,, | 1°44′ N. | 33°35′ E. | 3600 |
| Sozi | Buganda | 0°20′ S. | 32°19′ E. | 3800 |
| Tororo | Eastern | 0°41′ N. | 34°11′ E. | 4200 |

*Represents Meteorological Stations, all others being Rainfall Stations.